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The Journal of the Child-Study Society.

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The Journal of the Child-Study Society.

The object of the Society is the Scientific Study of the Mental and Physical Condition of Children, and also of Educational Methods, with a view to gaining greater insight into Child-nature and securing more sympathetic and scientific methods of training the young.

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Child-Study.

The Journal of the Child-Study Society.

Vol. VI.—No. 1. FEBRUARY, 1913.

EDITORIAL NOTES.

Seguin's Physiological Method.—The discussions on the so-called "Montessori Method" continue to be as keen and the attendance as overflowing as at first. Never was so much enthusiasm shown over educational method. As Dr. Kimmins said at one of the meetings, they are like first nights at sensational plays. This is all to the good, and all true educationists rejoice at it. But is it not time for us to begin to study Seguin's ideas in his own writings? Until we do this, and criticise through experiments, as Dr. Montessori does, there will be much waste of words, and idle beating of the argumentative air.

In the controversy the Froebelians (that is, the Free Kindergartners) forget that they are no longer Froebelians. They will make splendidly successful Seguinians, when they have studied the physiological method. Any one who doubts the former of these statements should read *Froebel's Chief Educational Writings,* by Dr. Fletcher and Professor Welton, and *Educational Issues in the Kindergarten,* by Miss Susan Blow.

Our readers will get great help towards the right understanding of Dr. Montessori's work from the three articles in this issue: the first by a practical worker who was a pupil under Dr. Montessori, the second by a scientific critic, and the third by a scientific experimenter.

The School Psychologist.—After the school doctor comes the school psychologist, and both have come very much too late and very inadequately. The London County Council have appointed Mr. Cyril Burt, M.A., as school psychologist. This is excellent; other education authorities will please copy. Unfortunately Mr. Burt is only to be a half-timer. There is work enough for several full-timers.

We trust the L.C.C. will soon establish a special department for psychological investigations, and that they will make a special point of securing what may be called educator-psychologists, *i.e.* those who know both education, as such, and psychology, as such. The pre-eminent example of such is Mr. W. H. Winch, M.A., who may be said to be the father of a "school" of educator-psychologists, and whose work is appreciated by the leading psychologists in Europe and America.

The Children's Welfare Exhibition.—If we accept Ruskin's dictum that it is better that people should think wrongly than not think at all, we must agree that it is still better to make them think towards the right. The enterprise of the *Daily News and Leader* will undoubtedly have made people think, and think towards the right, about children. Thus sweet are (some of) the uses of advertisement; and thus difficult is it (sometimes) to do good to ourselves without benefiting

our neighbours, especially when the latter is also intended.

Many of the lectures must have proved as helpful as interesting; but it was unfortunate that most of the lecturers were what we may call individualistic educators with axes to grind: most honourable and admirable axes, but axes to grind. They represented rather the empirical discoverers of the most efficient way of achieving practical success, than the scientific educationist with the latest results of experimental investigations.

One lecturer spoke of "neurones or nerve fibres as they are called"; another seemed quite convinced that any system of instruction which involved the use of the sense of touch was a "psychological method"; and a third suggested that if there be such people as educational experts, then "the Head Master of Eton must be the expert of experts"! A striking instance of irony (was it conscious or unconscious?) occurred: A speaker condemned in unmeasured terms the hideous ugliness and evil influences of gramophones and golli-wogs, while both were present in the exhibition. But the *Daily News and Leader* deserves our thanks.

The Joint Educational Conference.—This was held in the University of London buildings, and was a decided success. It may well be the beginning of a British Education Association; and the *Teachers' Guild* may justly feel proud of their initiative in suggesting and organising it. Its chief, if not only, defect was the plentiful lack of evidence of a knowledge and appreciation of the results of child study. Our society has much to do in propagating a knowledge of child-study.

MARIA MONTESSORI'S METHOD OF SELF-EDUCATION.

By Madame M. L. Pujol-Segalas.

1. "Truth is one and simple, it appears ever the same to all daring spirits who carry courageously into practice Descartes's principle, not confining themselves to any preconceived idea, but following the light of reason, guided by experience, wherever it leads."

This sentence is a quotation, and it was written by Baronessa Combrugghe in the preface to her French translation of Froebel's book on the "Education of Man."

I shall make it more or less the text of my talk with you this evening, my wish being, first of all, to insist upon the fact that there is no need for quarrelling about the personal merits of Froebel and Montessori, or any other great teacher of the young on this or that side of the ocean. To me it seems that Froebel had, more than seventy years ago, a true intuition of what education ought to be; and, seeing that there is nothing more important, he set himself to work with little children to find the means of carrying out his conception into immediate practice.

More recently, a few years ago, Maria Montessori was studying, as a doctor, the case of deficient children; and, in her endeavour to make up for their deficiency by more efficient methods of tuition, she discovered the principles which must be at the base of all training, that is really intended to help in the development of the faculties. The wonderful results she obtained made her desirous to experiment with normal children. She knew it was worth while giving up all other concerns to devote her whole life to this grand work of education.

That man and that woman are two fine figures, who both inspire me with admiration and gratitude. By different ways they come to similar conclusions, in many cases: "Let Nature be our guide," says Froebel. And many of you have read the

last sentence of Maria Montessori's book : " Our pedagogical method is informed in Kant's high concept, Perfect art returns to Nature."

It was also Froebel who wrote : " Unconscious man, as a simple product of Nature, has no hesitation in claiming what is good for himself, and he requires it under the shape more suitable to its aptitudes, and to the nature and the power of the forces expressed through him. Whatever objections may be raised against that truth and its applications in education, it will, none the less, justify itself, in all its radiance and beauty, in the eyes of the generation whose faith and confidence will rise up to it ! "

Now, Maria Montessori, faced by the results obtained in some of her children's houses, rejoices to find that each one of the little pupils perfects himself, through employment of his own powers, and goes forward guided by that inner force which distinguishes him as an individual. Do not those words of the Italian educationalist appear as a confirmation of those of the great German master? They do indeed. Only the position of Froebel is rather that of a philosopher, which renders subsequent experiments desirable to demonstrate the reality of his system to a majority of less intuitive modern people. Doctor Montessori proceeds as a scientist, formulating the law, according to the results of carefully conducted and many times repeated experiments. I do not mean, of course, that Froebel lacked the power of observation and induction which is the main characteristic of the man of science, nor that Montessori does not possess to a very high degree the power of intuition and deduction. I simply intend to say that the starting points of these two great initiators are different. The difference is due, not only to individual mental qualities, but also to circumstances in time and to the special genius of the race to whom each one belongs.

I do therefore rejoice that there are many Froebelians, and that in most Saxon countries : in Germany, in England, and also in America, Froebel Institutes are flourishing and benefiting large numbers of children. However, personally I am a Montessorian, because it is the nature of my mind to progress slowly by means of experiments, methodically conducted, rather than by great leaps and bounds, through sudden revelation, however much I may recognise the value of that. As far as I am concerned, I find that the analytical process, implying more precision, brings me finally to a more satisfactory and more complete synthetical apprehension of any subject.

I quite sympathise with Frobel's idealistic view of education, but the more realistic methods of Maria Montessori seem to me to contain more assurance for the future ; they are safer because they retain our attention longer on the individual and social aspects of education, so varied and essential, and so without our losing sight meanwhile of the general truths. At the present day, when life has a tendency to become dangerously artificial, it is necessary that the educationalist should make an effort to attain, through the study of the child, to a truer and more practical knowledge of the human needs and possibilities.

II. *At the basis of all is the free play, the spontaneous work of the child's faculties or latent powers.* I suppose we are all agreed on this all-important point, in theory at least. Froebel has claimed it, and perhaps demonstrated it clearly. Since his time the whole teaching world has been repeating it with more or less conviction, but in practice there are but few, I am afraid, who have been able constantly to inspire from it their whole conduct towards children. Those few must have been the really successful teachers. In the United States of America, and in the North of Europe there has perhaps been a more general effort in that direction ; experimental methods were introduced in many schools, and thereby more life was infused in all the scholastic transactions.

I sometimes read in English and American magazines interesting accounts of

new attempts to remove all artificial barriers between the child and the thing one wishes him to be acquainted with. In the special subject of drawing (dessin) much has been done (many are aware of it) by our good and much honoured friend Mr. Cook, of South Hill Park, London. Not long ago there was given, also at the Child Study Society, amongst other most interesting papers, one by Mr. Marshall Jackman about the methods he uses to prevent arithmetic from becoming, in the junior classes, a blocking of the child's mind that would tend to make him a stranger to the sciences of logic and mathematics, as is too often the case for many of our young people.

In the Latin countries less had been done until lately, on account perhaps of our more conservative temperament, and also, I may say, by reason of the much exaggerated importance that it still granted to examination and diplomas; that, as you know, makes it more or less a necessity for the teacher to drag his pupils feverishly along a programme, not at all adapted to their individual requirements. However, some have dared, even in France. Allow me to mention Professor Pujol, who, trusting his intuition, has put it to the test of experiment for the last ten years, and has thus quietly evolved what some consider as the truly natural and rational method of teaching languages. All that work, and much besides, of which we may not yet have heard, will have to be retained, and all such researches will serve their purpose even better in the future. At present, like experiments, successful though they appear to us, do not produce every possible result. The reason? Well, the child's mind has nearly always been deformed or hardened, before it is put to the test by these truly scientific methods.

I was faced by this difficulty over and over again, as the headmistress of a girls' college which my husband and myself founded, to try to carry into practice our, shall I say, not generally accepted conception of education. The work proved satisfactory from many points of view, and from the very beginning pupils came in as large numbers as the house could contain. However we gave it up, on acknowledging this necessity: Right principles must be applied, before it is too late for them to bear the best possible fruit, that is even with the small child, while his mind is quite fresh, and before the usual mode of training has made him more or less deficient. For, to a few naturally deficient children there are many artificially deficient ones. I mean to say that hundreds and thousands of such are being fabricated in our homes and schools all over the world, and this to me is appalling! That such is the case I was well aware, and I had dreamt many wonderful dreams about "what might be," when I first met Maria Montessori. On visiting her Children's Houses I was struck (probably like Mr. Holmes himself during his journey to Italy), by the fact that there was realised, under my eyes, what might be everywhere, for the greater happiness of the coming generation.

When I entered La Casa dei Bambini dello Fia Guisto, about the middle of the school year, all the little inmates were indeed working with a will, and looking most radiantly happy. Of course this fulness of joy was the result of the really free play of their unfolding faculties, and of the untrammelled expansion of the life within. Not a few were sitting quite by themselves at their little tables, others in groups, some busy, some watching their friends. As to the mistresses, they seemed to be playing no prominent part. At most they had made some suggestions at the beginning with regard to various occupations, but the little mites had made their choice, fixing their attention at once on whatever interested them at the time. The fatigue was none; because, if there happened to be any real difficulty in the work, the child was prepared to make the necessary effort to overcome it, for special reasons of his own.

On the contrary, when you take a number of children together and tell them to do the same thing, in the same way, at

the very same moment, do you think that there is any free play of the faculties? However delightful this particular piece of work may seem to you, or to a few of your little companions, that does not much improve the sad case of the remnant. Of course, if the mistress is very clever and sympathetic, she will manage to rouse the interest of many of the little souls there assembled. Can we say of all? The probability is that a few will find the lesson or the exercise too easy, and therefore tedious. Under those circumstances to remain quiet requires on the part of such pupils an exertion of the will of which they are not always capable, for so long as is expected. Thus it turns out that the most intelligent pupils often belong to the category of those whom we call naughty children.

More often, many will be prevailed upon to strive and do some work which is too difficult for them, or in too short a time for their present ability. So they get into the habit of doing things badly or indifferently well; and they will gradually lose all confidence in their power of achieving anything, or any capacity of just appreciation. This goes on day after day, because they belong to that majority for whom it is easier to obey, even at the expense of health and comfort, than to resist tyranny. There the poor soul, pent up in its prison-house, languishes during those years when it was meant to grow silently among surroundings of peace and love; and then it shrivels up miserably. No wonder, since it lacks the necessary instrument to enter into communication with the world outside; since the mind that belonged to it is constantly a prey to the teacher's or the parent's will, and the child himself is given no opportunity whatever to gain control over it.

Who will say how many human beings have thus lost their opportunity of "living a life" in the truer and higher sense of the expression. Here is the secret of so many puzzling cases of children that were brilliant at four or five, and who, at sixteen, have become utterly incapable of thinking their own thoughts. Their minds have been transformed into mere reflectors of other people's minds, ever since their so-called education began. We mean well I know, but all the same we have made slaves of them intellectually and morally. Then we are astonished when we find that they are no longer able to behave as independent beings. They will repeat a professor's lecture, or the text of a book, more or less accurately; and all such borrowed knowledge may have been even fairly well assimilated, and found sufficient where examinations are concerned. But, if you stop feeding these comfortable students, they will starve; you will find their mind refuses to work if not actuated from outside.

From the moral point of view it is even worse: they do not possess the least fragment of that liberty which Epictetus enjoyed to the full, in spite of the slavery to which his body was submitted. If in them a personality ever manifests itself again, it will only be when their mind is put into motion by lower instincts or coarser desires. Nowadays we do not believe much in the higher spiritual freedom. Of course we don't, because so many have been deprived of their rights, as human beings, when they were young and defenceless. A small minority were at an early age strong enough or wise enough to shoot down their own roots straight into the soil, despite the surrounding thicket of foreign weeds; they escaped, in some measure, deforming influences; but in later years they have often been driven well nigh to despair in the struggle to protect their inner life, under economic pressure, because they are, in some countries, such rare exceptions. I have seen it less with the English nation than with several others I know, therefore I believe that you will understand us Montessorians when we appeal to you for the sake of natural and social order for the sake of evolving individualities, to insure the child during his tender years against an oppression of the worst kind, no matter whether the motive is blind tyrannical affection or easy-going selfishness. [*Etc.*]

THE MONTESSORI METHOD: ITS PRINCIPLES AND PRACTICES.

By Robert R. Rusk, M.A., B.A., PH.D.

The Montessori system of early education has three aspects: the social, the psychological and the pedagogical. With the significance of the House of Childhood, the new form of social institution which provided Dr. Montessori with the opportunity of putting her principles into practice we cannot here deal, but shall confine our treatment to the principles and practices of the new educational method.

Principles of Method. The Montessori method is primarily intended for children under school age, that is, from three to seven years of age. Before proceeding to characterise the principles underlying the new method we should perhaps recall the fact that the child under school age has usually acquired unaided an education which, if somewhat unsystematic in character, is nevertheless not inconsiderable in amount. We may conclude then that with proper guidance such education could be vastly improved.

The method adopted by Dr. Montessori for children of the age in question was determined by her training and previous experience. Dr. Montessori having graduated in medicine, was for a time in charge of the training of mentally deficient children. Her success with these was remarkable; she taught a number of such children to read and to write so successfully that they were able to be presented for examination with normal children of the same age, and this wonderful result she attributed to the fact that her pupils had been taught by a different method. From her observations she concluded that the methods employed with defective children were more rational than the ordinary methods, and if applied to the training of normal children would yield even better results than with defective children.

To be successful these methods should obviously be applied to children at a stage of development corresponding to that of deficients, that is, with infants. At this age the child has not acquired the co-ordination of muscular movements necessary to enable him to perform the ordinary acts of life, his sensory powers are not fully developed and his emotional and volitional life is still unstable. The significance of the pedagogical experiment in the Children's Houses lies in this, as Dr. Montessori expresses it: "It represents the results of a series of trials made in the education of young children, with methods already used with deficients" (*The Montessori Method,* p. 45).

It is indeed surprising that earlier application has not been made of the methods used in educating certain well known physical defectives, for example, Laura Bridgman and Helen Keller. These cases present us with what, in the terminology of scientific methodology, are called "natural experiments," a type of experiment which in other sciences is usually fully exploited.

By discovering then the main characteristics of the training of defective children we shall have the key to the new Montessori method. The first principle is to train the pupil to be independent of others in respect to the ordinary practices of life; it appears also to necessitate approach to the child mind at a lower level than can be adopted with normal children, an appeal to the senses rather than to the intellect. In the case of physically defective children it implies training one sense to function vicariously for another, for example, with deaf children, teaching words not by hearing the sounds but by feeling the vibrations of the larynx of the speaker. The ultimate reference is to the sense of touch, which is regarded as fundamental and primordial.

Dr. Montessori may be said to have adopted the tactualist standpoint, and in the education of young children applied the principle that the sense of touch is fundamental. She maintains that it undergoes great development during early years, and that if neglected at this age it loses its susceptibility to training.

The Psychological Method. Séguin, of whom Dr. Montessori claims to be a dis-

ciple, had designated his treatment of the feeble-minded as the physiological method. Making allowance for the advance which Dr. Montessori has made and her adaptation of the training to normal children we may characterise her method as the psychological method in education. Pestalozzi sought to psychologise education, but, as in his day there existed no psychology of the school child, he ended by mechanising instruction and the methods which with him yielded results regarded as miraculous are the despair of the present-day teacher.

The psychological method in education implies that the educative process is dependent on the stage of mental development of the child, even in his interests, not on the necessities of a curriculum or on the teacher's record of work. "By education," says Dr. Montessori (p. 104), "must be understood the active help given to the normal expansion of the life of the child." The *psychological moment* in the educative process comes when consciousness of a need arises in the child mind. "It is necessary then," in the Montessori method (p. 358), "to offer those exercises which correspond to the need of development felt by an organism, and if the child's age has carried him past a certain need, it is never possible to obtain, in its fulness, a development which missed its proper moment." The duration of a process is determined, not by the exigencies of an authorised time-table, but by the time required by the child to exhaust his interest in the process. It is currently stated in educational works that the attention of the young child can only be sustained for a very few minutes at a time. This, however, applies only to enforced attention; spontaneous attention, exhibited, for example, in the child's play, can be sustained for a considerable time, and it is the latter which is allowed free scope in the Montessori method. Thus in a Montessori school we may find a boy working unremittingly at a self-imposed task for several days on end (Tozier, *An Educational Wonder Worker,* p. 10).

From the psychological standpoint there is likewise neither rightness nor wrongness. Psychology, as all the text-books agree, is a positive, not a regulative science. Consequently in the Montessori method, which adopts the psychological standpoint, if a child fails to perform a task or to appreciate the truth of a principle, "the teacher is not to insist by repeating the lesson, and not to make the child feel that he has made a mistake, or that he has not understood" (p. 109). She must assume that the task has been presented prematurely, and, before again presenting the stimulus, await the manifestation of the symptoms which indicate that the need exists.

As there is neither rightness nor wrongness in a psychological method, there are naturally in the Montessori system no prizes. The pupil's sense of mastery is his highest reward. "His own self-development is his true and almost his only pleasure" (p. 356). Correction comes from the material, not from the teacher. "From the 'Children's Houses,' the old-time teacher, who wore herself out maintaining discipline of immobility, and wasting her breath in loud and continual discourse, has disappeared, and the didactic material which contains within itself the control of errors is substituted, making auto-education possible to each child" (p. 371). This is the principle of Rousseau and of Spencer, not however confined, as by them, to moral misdemeanours, that the child should meet with no obstacles other than physical. It is an *intellectual* "discipline by consequences."

The psychological method also implies the perfect freedom of the child, the freedom which consists in absolute obedience to the laws of the development of his own nature. "The method of observation [*i.e.* the psychological method] is established upon one fundamental base: the liberty of the pupils in their spontaneous manifestations" (p. 80). This liberty necessitates independence of action on the part of the child: "Whoever visits a well-kept school is struck by the discipline of the children. There are forty little beings, from three to seven years

old, each one intent on his own work; one is going through one of the exercises for the senses, one is doing an arithmetical exercise, one is handling the letters, one is drawing, one is fastening and unfastening the pieces of cloth on one of the wooden frames, still another is dusting. Some are seated at the tables, some on rugs on the floor" (p. 346).

It may seem rather a go-as-you-please method (cf. p. 92), but this term of reproach may yet become the honoured motto of the new education.

Practices of Method. Passing from a consideration of the principles to the practices of the method, we find that they fall into three classes: (i.) the exercises of practical life; (ii.) the exercises in sensory training; (iii.) the didactic exercises.

i. *Practical Exercises.* The main task in the training of feeble-minded children is to teach them to take care of themselves. This is likewise the first part of the training in the House of Childhood. It is a training in liberty; for freedom, according to Dr. Montessori, does not consist in having others at one's command to perform the ordinary services, but in being able to do these for oneself, in being independent of others. Thus in the Houses of Childhood the children learn how to wash their hands, using little washstands with small pitchers and basins, how to clean their nails, brush their teeth, and so on. Educational gymnastics are likewise arranged to train the child in the movements necessary in dressing and undressing. The apparatus for this purpose consists of wooden frames, mounted with two pieces of cloth or leather which are fastened and unfastened by means of buttons and buttonholes, hooks and eyes, eyelets and lacings, or automatic fastenings. After some practice at these exercises the child finds that he has acquired a dexterity which enables him to dress and undress himself, and, not content with the satisfaction derived from such independence, his consciousness of the possession of a new power arouses in him a desire to assist in dressing the whole family (Tozier, p. 10). All the furniture in the House of Childhood, tables, chairs, etc., for there are no fixed desks, are of such a size and construction that the pupils can handle them easily; they learn to move them without noise and without clumsiness, and thus are afforded a training in motor adjustment.

Dr. Montessori has also devised certain formal gymnastic exercises to develop in the child co-ordinated movements. She entirely disapproves of the application to the child of the ordinary gymnastic exercises practised by the adult. "We are wrong," she says (pp. 139-140), "if we consider little children from their physical point of view as little men. They have, instead, characteristics and proportions that are entirely special to their age." A new set of exercises must consequently be evolved, and, in accordance with the general Montessori principles, this has been accomplished by observing the spontaneous movements of the child. The result of the new exercises is to give the pupils of the House of Childhood a gracefulness of carriage which distinguishes them from other children. [*Etc.*]

THE MONTESSORI METHOD AND COLOUR DISCRIMINATION.

By Frank Smith, B.A., B.Sc.

The following account describes some experiments with only one small part of the Montessori apparatus—the colour discrimination tests on the children of an elementary school. There was a difficulty with these children at the outset, in that they were so dependent on the teacher's directions that they did not give very spontaneous expression to their personality when left with the freedom that the dottoressa advocates: they either sat passively waiting for orders, as they had been taught to do, or they began to play with one another. The restraint of English school discipline, although it is wonderfully less now than a generation ago, is still sufficient to cause Mr. Holmes to say, in his pamphlet on the Montessori method (p. 6): "If child study is to be profitable, freedom must be given to the

child. His sayings and doings are of interest to the observer in proportion as they are spontaneous and natural." In other words, if "experimental pedagogy" is to become possible, the child must be allowed to express himself freely in as many directions as possible, and the restraint to which he is at present subjected must be reduced to a minimum." A quotation from the dottoressa's book emphasises the same point: "The school must permit the *free, natural manifestations* of the *child* if in the school scientific padagogy is to be born. This is the essential reform" (p. 15). As my time was limited, however, I was unable to establish this ideal state of affairs; I had to hasten the distracted type of scholar, and to repress just a little the child who took undue advantage of the greater freedom of my experimental room. However, I do not think that this invalidates my results, as it is unlikely that the Mortessori discipline will be adopted in our English schools for some time to come.

Apparatus.—I chose the colour discrimination tests as my field of experiment, and prepared different shades of several colours as described by the dottoressa (pp. 200-203). But whereas she had eight tints, and each tint was present in eight gradations of intensity (making sixty-four tablets in all), I had seven tints, each in five gradations only (making thirty-five tablets). I found that the five gradations of one tint provided a sufficiently difficult exercise for most of my subjects and in one or two cases where I began with six gradations I discarded one of them after a little practice in order to make the series symmetrical and to lighten the task a little.

In the chapter of the book called "The Education of the Senses" we are told with some emphasis that "the didactic material *controls every error*. . . . It is the work of the child, the auto-correction, the auto-education, which acts, for the *teacher must not interfere* in the *slightest* way. . . . There *remains for the teacher nothing but to observe.*" We may assume, I suppose, that these remarks apply equally to the colour tablets as to the other material described in the book, i.e., that the child, in arranging the colour tablets in order, will discover those that are wrongly placed from the tablets themselves, and not because of the teachers' interference, and will *correct himself.* Similarly, if one tablet is accidentally overlooked during the arranging, and discovered at the end of the exercises, the child will at once search about until the tablet is correctly placed in its own series, amongst the other gradations of the same colour. The dotoressa describes a series of exercises with the colour tablets, gradually increasing in difficulty until the time arrives when the young child of three years of age can put all the sixty-four tablets into correct gradation "with an ability before which we stand amazed."

Subjects of Experiment.—In order to test both the claim of the didactic nature of the material, and the influence of age upon the performance of the exercise I had about forty subjects under observation, varying in age from three to six years. It was an ordinary town elementary school, attended by children of fairly poor parents, though there were considerable differences of home environment visible in the varying cleanliness and general physical condition of the children. As the children of the district are not allowed to attend school till the age of four, the few subjects that I had under that age were not regular scholars, but only came for the purpose of my experiment, and were new to school conditions.

I began the experiments with the children in groups of four, keeping each group for a period of about twenty minutes for each lesson. The lessons were taken in a separate classroom. As I found four children too many for close observation, I soon reduced the number to two, and as I had two complete sets of colour tablets this gave greater freedom to each child, since he was able to work independently with a complete set of colours. The experiments covered a period of five weeks, with about four lessons a week for each child.

Results.—The most obvious and striking fact at the beginning of the experiments was the very unequal development of the children, almost irrespective of age. The first exercise was to present to the child three strong colours, as red, blue and yellow, in pairs, all mixed together. One colour was picked up and given to the child, who was asked to discover its duplicate in the group. Thus he arranged the six in a column, in pairs of the same colour. The exercise could be further gradually complicated until the eight colours, or sixteen tablets, were given at once. The lighter tints were treated in the same way.

These preliminary exercises proved to be very easy on the whole. A few mistakes were made at the beginning by some of the youngest children, who were probably distracted by their new surroundings, although some of the youngest did their tasks without error and quickly. One boy of three years and one month, although completely baffled by later exercises, was able to do this test fairly well. Of the twenty-four children over five years of age, only one went seriously wrong at the first attempt, and on a second trial she got them right. Of the twelve children between the ages of four and five, no less than four made serious mistakes on the first day. Of course, imperfect colour discrimination was not the only cause of error. A shyness due to strange conditions, a limited power of concentration, and an imperfect grasp of what was required were but a few of the factors tending to cause mistakes.

As daily practice followed, the children soon grew accustomed to the task and the conditions and became more natural. With few exceptions they would talk to me of their school and home interests. In general my first impressions were confirmed, and striking inequalities of development persisted among children of all ages, as shown by these tests, but especially between the ages of three and five.

Generally speaking, there were two ways in which the exercise was performed: some children would look at one of the tablets carefully, and then move their eyes up and down the line till they found the mate; others would pick up a tablet and carry it about till they came to one like it. The former seemed to rely more on the immediate memory of the colour than did the others, and also to make a more active choice amongst the group.

There was no connection between the power of discriminating between colours, and a knowledge of their names. This was very noticeable in one backward boy six years of age, who was able to match all the pairs quite accurately, but who was wholly ignorant of the name of any colour and who frequently gave different names to the same colour even during one lesson. The same fact was proved in many other cases, though an accurate knowledge of names seemed to give confidence and power to those who possessed it.

A frequent source of error was the darkest gradation of each series: dark blue and black were often confused, as also were dark brown and dark red. As I had occasion to refer to the "darkest" of a series fairly frequently, some of the more backward children, I think, looked on the different "darkest" tablets as being the same, and failed to notice that one was blue, another red, and so on.

To a few children the chief aim seemed to be the actual arranging of the tablets symmetrically and neatly, and this aim probably led to inaccuracies of colour choice being overlooked.

The most important point forced on my notice during these early exercises was the lack of self-correction shown by all the children whenever mistakes were made. This was evident to the greatest degree, of course, in the backward children who made many errors, but it was also seen in the children who only made mistakes occasionally. When the task was once completed there was no examination of results, and no power to discover where the error lay, even when the children were told they had made mistakes and were urged to correct them. It is well

known that a child is less analytical than an adult, and he probably sees things as vague wholes; hence a small error of detail, quite clear to the adult, may be invisible to the child until it is pointed out to him. In this respect, it seems to me, the colour apparatus of the dottoressa is not so valuable as some of the other apparatus she has devised. A square piece of wood will not fit into a triangular slot, and a very young child would soon learn the fact if he were playing with such apparatus. Material of this kind is didactic in a very real sense. But the colour material is not didactic in the same way: a red tablet will go next to a blue tablet without any outward difficulty, but it requires a specially directed act of attention and an elementary application of analytical criticism to perceive and correct the mistake. The more backward the child the more likely will it be that he will lack this power to correct, and until the material can be made more didactic, *i.e.* until the material will itself reveal the mistakes of colour discrimination by some more obvious sign than at present, I should say that many of the claims made by the dottoressa regarding the value of her sense-training apparatus do not hold with this colour material.

After scholars had succeeded in arranging the colours in pairs the next step was to present three tints of the same colour simultaneously, and show their arrangement in a series from dark to light. The number was then gradually increased (in my own experiments there were five different tints of each colour), until all the tints of a series could be put in a line with the position determined by the degree of saturation. Further complications were introduced by presenting two complete series of colours simultaneously, then three and so on, until at last all the tablets (thirty-five in my case) were given in a confused heap, and had to be put in order.

This exercise proved to be immeasurably more difficult than the first, and it will be agreed that it is a very complex task to give a young child. What I have said in a preceding paragraph about the lack of analytical attention applies here also with greatly increased force. Even with children six years of age, who soon acquired a fair mastery over the exercise, and who were able to arrange the tablets with only one or two slight errors, I never saw a *voluntary* act of attention being directed to each part of the finished result in order to correct possible mistakes. If I asked the children whether *all* the tablets were right, I got at first a careless "Yes." Gradually I began to get answers a little more cautious, such as "I don't know." There was never any keen desire shown to discover the errors. Sometimes a child would point to a tablet and ask if that were wrong, and the tablet pointed out was as often right as it was wrong. Not seldom would a child pick up a tablet that was in its right place, move it to one quite incorrect, and then wait with doubtful look for my judgment. I am speaking here, be it noted, of the best of my subjects, of those who quickly learned to arrange the thirty-five tablets with but few errors, yet who showed very little power of analysis and of self-correction. Of twelve subjects six years of age only two showed any tendency to go seriously wrong, and both were cases of markedly late development. The remaining ten would make one, two or three slight errors only without correcting them and this general tendency persisted till the end of my experiments. Of course, some subjects were more critical than others. It is worthy of note that when a child is *directed towards* the error he has made, he shows a fair power of making the correction. Thus if I said, "There is one slight mistake in the blue," a child of this group would almost always put his hand on the mistake at once and correct it. It is as though a fairly strong stimulus will start in his mind an analytical act of attention: otherwise his attention plays vaguely over the whole mass of tablets, and errors pass unnoticed.

Among the twelve children who were five years of age there were four who soon

acquired very fair mastery over the task and who belonged, in point of mental development as related to this exercise, to the group above them. Among the remaining eight there was one boy colour blind, and no fewer than four mixed up the green and heliotrope tablets almost every day. They would regularly put two green and three heliotrope tablets in one series, and the remaining three green and two heliotrope in another group. This lack of distinction between the two colours appeared in some of the cases to be very complete, for even a mild suggestion of error often failed to have any effect, and only a definite instruction availed. This same mistake appeared very frequently in younger children. Lack of critical analysis was almost universal in this group; and two or three of these subjects showed no attempt at all to arrange the tablets in graded series. It would seem that to such subjects the exercise was too long to be carried through to the grading of each series: the aim was forgotten by the time the seven different groups of colours had been separated, and the grading not attempted without further definite distinction and stimulus. Of course, mistakes occurred even in the first part of the exercise; a brown would be put in the reds, a dark blue in the greys, and so on. But the important point is that whilst there was an *effort* to separate the groups from one another, there was no desire to grade the common members of any one group. Yet when I picked up the five members of a group and placed them alone before the child. asking him to pick out the "darkest," then "the next darkest." and so on, I was frequently able to get a series correctly graded without any other interference. That is, the child was able to do the exercise if his attention was constantly re-directed to the work, and a stimulus frequently given, but of himself he did not seem capable of making so sustained an effort of attention as the whole exercise demanded.

The next younger group of children varied in age from four years and one month to four years and eight months, and many unequal attainments were apparent amongst them. One boy of four years and four months very quickly learned how to do the exercise, and seldom had more than two or three slight mistakes. But he never showed any power of correcting, and would sit patiently waiting for the next order without so much as a glance at the tablets. A girl of four years and six months had all the marks and qualities that go to the making of a ringleader amongst children; the power of quick adaptation to new circumstances, the ability to give commands quickly, a ready tongue, and a very good "surface ability." Yet she was amazingly weak in correcting her own mistakes. She did her task quickly and with confidence, constantly advised and helped the child working next to her, but repeatedly ignored her own mistakes at the end of the exercise. Daily practice modified this deficiency either very little or else not at all.

An interesting result appeared one morning. Two boys came into the room for their lesson when I was talking to the schoolmistress. They had been having daily lessons for some time, and knew exactly what to do. They sat down at the table and waited for orders. I gave none, but went on talking, pretending to take no notice of them. In a little while they grew restless and began to talk. One spoke of new clothes which he was going to have, and the other attempted to hold his own by describing his sister's new dress. They mentioned the colour of these articles of dress, and pointed to different tablets. By the time the topic was exhausted one of the lads had gathered up the thirty-five tablets in one hand and was holding them out over the table with great delight at the feat. His companion immediately tried to do the same difficult task, and expressed great joy when it was done. As they threw them down one card got caught at both ends and the force thus applied caused it to "jump" forward. This gave a new game, and for a few minutes there was every endeavour made to get all the cards "jumping." And

so it went on for the whole twenty minutes. But in all this there was never any attempt to put the colour tablets in order; there was no *desire* to put the thirty-five tablets into seven groups of colours, and each group into a graded series. Of course in a Montessori school the scholar is free to choose his own occupation, and is not compelled to do a set task at a stated time for the convenience of an investigator like myself. But I must confess that I am sceptical about a young child *under any conditions* spontaneously desiring to grade colour tablets, or at any rate completeing the task even if he begin it. For the exercise does not appeal to the utilitarian instincts of the child, and if he gets any pleasure from the task it is not because of the finished result, but because he has performed with some success a definite task of fair difficulty. It is probable that to the very young child the exact grading of the tablets seems quite an arbirtrary arrangement for some time. With practice he learns to discover "the darkest" of the group more and more quickly, and perhaps memory becomes as important a factor in the placing of the tablets as the power of discrimination.

The subjects under four years of age needed repeated directions if definite results were to be obtained. When left to themselves they made no progress towards a definite end; there were many forms of activity, but it was chaotic. Two children of three years and five months, both from good homes, showed excellent promise, but the task was too complex for them. They could divide the whole heap into groups of colours with fair ease, but they never offered to grade them without further directions from me, and in this part of the task the results were quite mediocre. When, on the other hand, I gave them the members of one colour group only and said: "Pick up the darkest and place it at the end," I invariably had the right one chosen. Then I would ask for the "next darkest," and so on, and in this way the subject was often able to put a whole series in gradation without a single mistake. But other subjects in this group were wholly unable to do the task. Several made very glaring mistakes in separating the colours from one another; a few, indeed, never picked out a correct tablet except by wild chance. There was never any attempt to correct errors, and no desire to arrange the tablets correctly. For these children the material was not didactic in any sense.

We may summarise these results very briefly:—

1. In an English elementary school the exercise is of sufficient difficulty for children between the ages of four and five years, and backward children will find exceptional difficulty in it until long after they are five.

2. To the youngest children the material is not didactic, and does not lead to autocorrection in the way that is claimed for it. With the most advanced subjects the material becomes more didactic.

3. Individual preferences for certain colour arrangements are treated as errors, and there is only one "correct" result. This allows no place to self-expression, and does not encourage any æsthetic appreciation of colour combinations.

The Value of the Exercise.—These results raise the further question of the value of the exercise to the child. The dottoressa is very definite in her claims: "The education of the senses makes men observers, and not only accomplishes the general work of adaptation to the present epoch of civilisation, but also prepares them directly for practical life." The statement is vague, but it is very like a crude re-statement of the doctrine of formal training. It may be sufficient to say that this doctrine, in the form here stated, has now no defenders among psychologists. Because a child has learn to observe sixty-four shades of colour we have no right to say that he will be any better an observer of other objects in life than if he had learnt to observe sixty-four mud pies in the street. All we can say with certainty is that he will observe tablets of colour more easily as a result of the exer-

cise, and he may pay more attention to the colours about him, though how far this is likely is a very open question.

The dottoressa goes still further. Not only does she postulate a faculty of general observation, but she claims that her training will give the power to turn the general faculty to meet specific and specialised problems, for we are told that "all the forms of adulteration in food stuffs are rendered possible by the torpor of the senses which exists in the greater number of people." Now the detection of adulterated food is, in most cases, a highly complex process, different for each kind of food, and success depends not only on an educated sense, but also on *specific practice with the food in question.* These things are not general, but highly specialised activities, and a formal sense training will not bestow them on our scholars.

Again, we are told that "the æsthetic harmony of nature is lost upon him who has coarse senses. The world to him is narrow and barren." Yet there are many who experience the glorious exultation of spirit that comes from Nature without discerning too closely or carefully the differential stimuli of colour and of shape. Indeed there is some ground for holding that the acute discrimination of the different elements of a scene prevents the enjoyment of it as a *whole.*

To sum up, we may emphasise the fact that sense training is the beginning of education, not the end. The value of it is that the ability it begets is not transferred to the larger activities of life (else would the Red Indian be altogether too wonderful for us), but that it is the best means of giving our percepts a rich and accurate *content.* And it is just here that the dottoressa's system shows its greatest weakness: she has emphasised, not the content, but the fineness of discrimination. Yet fineness of discrimination is a power which we need only rarely, and in specialised functions, but a rich content of sense experience is the very breath of the young child's mental development. To distinguish the green of the grass from the green of the fern, to hear the cries of birds and see their flight, to discover a few fossils, to follow a stream from the hills to the plain, to capture a wasp's nest, to see cows milked and sheep sheared, to know the pageantry of autumn in the woods and on the moors, to see the spring's re-birth —these and a thousand other glorious sense experiences would provide a sense training from which full and truthful percepts would grow, and book education would become much more meaningful.

I have criticised but a small part of the dottoressa's method, and questioned certain of her general conclusions. I would like to see experiments proceeding on a large scale and under diverse conditions, so that we might arrive at a reasoned conclusion in our judgments. For we are all groping towards the truth, and the road thereto is long and difficult. I cannot end this paper without acknowledging the admirable tone of the dottoressa's book, and paying my tribute of respect to her patient investigations, and to her devotion to the problems of scientific pedagogy.

PARENT EDUCATORS.

By Professor Bidart. Translated by Miss M. S. Ryan, B.A.

The End and the Means. Our subject is the right education of the child, and we have to ask first in what that education consists. The work is so great and the terms denoting it so vague and indefinite! Our first endeavour shall be to set out as clearly as possible the scope of our enquiry.

I once heard this remark made of a man: "He is a marvel! He has every good quality and not a single bad one!" This is precisely what we must aim at for our child, no vice and all the virtues.

Then have we two separate pieces of work to accomplish? Must we first uproot evil tendencies before beginning to develop the good? Far be it from me to offer that advice. There is one means, and only one, whereby we can combat evil, and that is by substituting the contrary good.

But it may be asked, *which* good quali-

ties? They are so many and so manifold. If I could classify them, I could easily survey my whole field of action.

When I was a child, my mother used often to say to me, "You must learn to be a worker. The man who does not earn his bread is obliged to steal."

I was about twenty when a man said to me, "You are entrusted with the education of these children; aim at cultivating in them one good quality, and if you succeed in that, you will have done everything. Make them *good*." Later on, another said to me, "I have suffered in my time, no one will ever know how much. And I have suffered solely because those who have had to do with me have not respected my rights, have not acted justly towards me. Sir, train men to be *just*."

About the same time I met one day in the street a man of middle age; in fact he seemed already well advanced in years. This was his advice: "Teach man to subdue his passions. Make him *temperate*."

I have often meditated on these four remarks. Does not each of them contain a part of the truth, and do not the four cover the whole of education? In short, man must live, hence he labours; he should live without thereby bringing suffering on his fellow men, hence he must be just; justice which is not stiff-necked and proud, must needs be tempered, and, so to speak, impregnated with goodness of heart; goodness, justice, love of work, may all be rendered fruitless by intemperance: the human being who possesses these three qualities, and also the virtue of temperance, is neither to be pitied nor despised: he who lacks one of these qualities lacks much.

Such then is the object of a right education. Let us now enquire into the manner of attaining it.

I have seen a young man of twenty swayed as easily as a baby. He could not take a step without being urged to it and supported by his parents. And I said to myself: "This is not right. A young fellow of that age is no longer in swaddling clothes. He ought to walk alone; he should be enlightened by his own reason and controlled by his own will."

On the other hand watch this little boy of ten who always does as he likes. He suffers no restraint, no restriction; he is absolutely undisciplined, nothing is forbidden him. His father and mother leave him full liberty. "Poor child," I said to myself, "at that age a child cannot know what he ought to do on every occasion. He must learn to control himself by the help and example of others, by their experience and their reason. At first he has nothing but his own ignorance and caprice to govern him. In other words, he must learn to obey."

The little Paul, two years old, does not wish to do what his mother for the first time bids him do. "Will you obey me?" she says to him. "But, Madam, this child of two cannot as yet understand what you mean by the word *obey*. You wish him to go to bed without crying. You cannot expect him to do to-day, by exception and in order to please you, what you have never made him do before. But he would obey you implicitly, and without any difficulty, without a single cry, if you had only thus put him to bed or into his cradle from the beginning, if you had accustomed him to it."

It thus became clear to me, in thinking over these three examples, that habit, obedience and self-control are the three stages of the moral life. The baby must be good without knowing it; the child, whether he will or no; the man, because he wills it. No education is complete if it does not give the desire to do good; but this good will is first developed and fostered by obedience; obedience is rendered easier by means of the early habits unconsciously contracted, and these early habits depend solely on the arrangements of the first years, nay months, of the child's life.

Both the end and the means now stand revealed. Each of the four great qualities: goodness, justice, love of work, and temperance must be acquired by way of habit, obedience, and the exercise of the will. [*Etc.*]

SUGGESTIONS FOR STUDY AND PRACTICE.

Learning by Touch: An Experiment.—[I got my wife] "to cut out an Irish letter (I know no Irish), and put on my desk in a dark room. Then I went into the room, passed my finger over it for a little more than a minute, and coming back to her, I drew the letter on a sheet of paper with my finger. It was a good copy, except that I had apparently taken for granted that it was written in an upright hand, while it was really sloping, and this led to a most interesting quantitative experiment. I asked her to cut out an angle of so many degrees as measured by a protractor, and to make its legs of unequal length. This was done, and the stencil laid on the desk as before. I went into the dark room, felt it for less than a minute and a half, and came back and drew it with my finger. The original angle was cut to forty degrees. The angle I drew roughly on the paper was measured also as forty degrees. (I send you the paper drawing pasted over the stencil. Both these were better copied than when I drew with the eye, even though I had the original before me). Next morning at breakfast, I ran my finger up and down an envelope once, marked the directions, ruled the line my finger traced, and on measurement found it 40½ deg. (drawing it by eye the preceding evening I had made it 37½ deg.).

"The extraordinary accuracy of this result surprised me greatly. It indicates, with a force I had never before realised so fully, how serious is the mistake we make in neglecting to use in education a sense which is capable of such extraordinarily accurate memory. (In respect to length also, the motor memory had the advantage. I estimated the difference in length of the two legs more accurately with the touch than I did by eye with the stencil before me. All this was after less than one and a half minutes touching)."—*Professor Edward P. Culverwell,* on "The Montessori Method," *The Times, Educational Supplement,* Jan. 7th, 1913.

Vocational Schools. — "Professor Carver, of Harvard University, says, 'In the present conservation of movement it is highly important that we realize two things: first, that our most valuable resources are our people; and second, that we are wasting people more than we are wasting anything else. . . . One will find, for example, four characteristic forms of waste labour-power, all of them of considerable magnitude. There are, first, the army of the unemployed, or the involuntary idle; second, the imperfectly employed, or the untrained; third, the improperly employed, or the acquisitively rather that productively employed; and fourth, the voluntary idle, commonly known as the leisure class.' The ideal system of schools for present-day needs should include: A system of vocational continuation schools. These schools must not in any way be regarded as substitutes for the present forms of schools. The present system is doing a necessary work, and ought not to be disturbed except to perfect it. The new type of school is a supplement to the old one, an attempt to carry further and apply general education to the practical problems of life."—*Edwin G. Cooley,* on "The Need for Vocational Schools," in *Education Review,* U.S.A., December, 1912.

Self-Education through the Senses.—"The Montessori System, based as it is upon the aphorism of Séguin that 'the physiological education of the senses must precede the psychical education of the mind,' demonstrates how in the normal child the process of physiological education leads naturally to the latter. 'Educating the mind through perceptions,' instead of by the pre-arranged reasoning of adults, is indeed the pivot on which the systems both of Séguin and of Montessori work; and the more active and better regulated brain of the normal child passes from sensations to perceptions, and from perceptions to ideas in a spontaneous fashion....As Dr. Montessori well puts it, 'what makes education possible with deficients provokes auto-education with normal children.'"—*Dr. G. E. Shuttleworth.*

THE CHILD-STUDY SOCIETY AND THE CONSTITUENT SOCIETIES.

A Suggested Investigation.—Dealing with the suggestion of an investigation into the value of kindergarten work, Professor Earl Barnes, writing to Miss Louch, says :—" It seems to me that in making a comparative study to prove the value of kindergarten work we had better confine the investigation strictly to the kindergarten. For comparison, of course, we should have to use children at home who have not been in the kindergarten. The investigation could best be made at the beginning of the first year of the primary school. All the children could then be selected who have been through the kindergarten, and a comparable number from the same general class of society who had not been in the kindergarten at all. I should think available groups could be found. For the test there seems nothing better at present than the Binet tests."

Appointments of Representatives.—Dr. Fletcher Beach has been appointed as the Child-Stduy Society's representative on " The National Health Week Committee," April 6th to 12th ; and Mr. H. Holman on the " International Kinematograph Exhibition " (Educational Conference Section), March 22nd to 29th, at the request of the promoters of these events.

The Dundee Society.—A movement has been set on foot to take care of the children of working mothers from 4.30 to 6 p.m., and three play-centres have been opened under the auspices of the Social Union, aided by a number of day school teachers, who gave their services and practical help freely and willingly. The central one of the three is held in a hall off Tay Street, and is ably and admirably guided by Misses Fraser and Henderson, assisted by students from the Training College, the Principal of which is Mr. James Malloch, the Honorary President of the Dundee Child-Study Society, who takes a deep interest in the newly established play centres, and who finds time out of a busy life to pay them an occasional visit. At 4.30 from 75 to 100 children are admitted to a commodious hall, with convenient side rooms, to which the children are allocated according to size and individual taste. The children march round the central hall in pairs to the music of a piano, and singing the airs played when they happen to know them. This has the effect of settling them down. They are then seated, and each one is supplied with a toothsome bun. In the large hall round games and singing games and musical drill are engaged in, and the little semi-motherless mites are more than delighted with these. In one of the side rooms the more tired ones are happily content to sit at a table and look at the pictures in illustrated magazines, while at an adjoining table clever little hands are busy cutting out pictures and pasting them into scrap books. A third group is whole-heartedly occupied with plastic clay shaping and making as only youthful hands can. Others take great interest in mat weaving with rafia, and on canvas with thick wool. Threading of beads, dressing of dolls, and making of needle books from Christmas cards are occupations dear to the hearts of all girls. The proceedings are varied occasionally by the telling of stories.—*Mr. D. Williamson.*

The Cheltenham Society.—Two more lectures are in prospect ; the first is on February 20th at the Ladies' College, by Miss Lidbetter on *The Montessori System,* and the second is at the end of March, by the President, Mr. B. Auden, on *Pre-Preparatory Training.*

A Committee Meeting was held on November 7th to discuss the attitude of the Branch with regard to local cinematograph shows, in view of discussions arising out of Mr. Holman's lecture on October 14th ; but, on the motion of the President, it was decided to postpone direct action by the local Branch.

The Joint Hon. Sec., Miss F. Baird, has gone to Rome for some months to study the Montessori System there. All communications should be addressed to the Hon. Sec., *Mrs. McCraith Blakeney, 5, Crescent Terrace, Cheltenham.*

The Exeter Society.—During the winter session three meetings were held, and all were well attended, so much so in the case of the last two that the usual meeting room was abandoned for the large lecture room of the College. The programme began in October with a discussion on the subject chosen for the Child-Study Society's last Conference, which Miss A. J. Walker had attended. She therefore opened the meeting by giving the main points raised by the speakers in London ; and a discussion followed. In November a most successful and enjoyable meeting was held, in which Mrs. Picken, a member of the Association of Teachers of Voice Production, spoke about *Story Telling to Children,* and illustrated her subject by telling, in a charmingly simple and dramatic way, stories from Kipling, Anderson, La Fontaine and other writers. In response to the vote of thanks she sent a well-remembered thrill through many of her audience by reciting some cautionary stories. The last meeting of the term was in December, when Miss A. M. Shorto, B.A., gave a clear and most interesting account of the *Montessori Method of Teaching ;* and afterwards members were able to examine for themselves some of the "didactic material," which students of the College had made under the direction of Mr. R. Toms. There was no discussion on the subject at the time ; that is to come at the first meeting of the present term—*Miss A. J. Walker.*

The Halifax Society.—The first meeting of the session was held on October 2nd, and Dr. Cecil Reddie, of the New School, Abbotsholme, Derby, gave, in an exceedingly straightforward manner, a general address upon *Activity in Education and its Influence upon Character.* He believed that the

education of the governing classes was sadly lacking on the practical, the active, side, and stated emphatically his opinion that the highest conception of real social service would never be formed until a radical change in the curriculæ of the public schools had been initiated.

Miss Dora Walford, B.Sc., formerly a colleague of Professor Findlay at the Manchester Fielden School, had some commonsense remarks to make on *The Place of Literature in Elementary Education* on October 17th. Miss Walford, who always does her work thoroughly, casually mentioned that during the course of one week she had bought up all the " penny bloods " she could find in Leeds and she had read every one from the psychological cover to finis. Although the task was one which was calculated to satiate a grown-up, still the " dreadfulness " occupied a larger place in the mind of the adult than it occupied in the books.

What Is and What Might Be was ably handled by H. H. Quilter, M.A., and the modern view that the interests of the child should have a much larger share of the time table than they at present get provoked in the discussion the remark sarcastic : " So if a boy wishes to leave his class to spin his top of course he ought to."

Miss Bone, of Sheffield University, gave an excellent talk on *The Bachfische* ; a talk which was warmly appreciated by the parents. The budding girl's little idiosyncrasies ; likes and dislikes in food ; love of dress, of imitation ; were touched upon kindly, sympathetically and wisely. Miss Bone has intimate knowledge of " The Flapper."

The session so far has been the best on record. Many interested outsiders pay 6d. for admission to each lecture, and our Treasurer has formed a habit of continually rubbing his hands.—*Mr. J. Arrowsmith.*

The London Society.—For London, 1912 has been a busy and successful year. The members continue to attend its meetings in large numbers. The lecture by Madame Pujol Segalàs, who came from Paris especially to give the Montessori Lecture, charmed all those who heard it ; the attendance reached 800, and the following day there were 500 at the Conference.

The London membership on the 31st, including subscriptions paid for 1913, stood at 484, capitation fees for the year were paid on 398 subscriptions received, and 398 copies of Vol. V. of CHILD-STUDY were sent to members.

The session for 1913 opens with a Lecture on February 13th, by Dr. James Kerr, on *Brain Mechanism and Handwriting* ; February 27th, *Development of the Child's Brain,* by Dr. A. Wilson ; March 13th, *The Teaching of Sexual Hygiene,* by Miss N. March, B.Sc.—*Mr. W. J. Durrie Mulford.*

The Tunbridge Wells Society.—The session was opened on October 9th, the President, Mrs. E. L. Pontifex in the chair. The subject under discussion was *Institutional Equipment and Its Bearing on Religious Development,* introduced by the Rev. Hume Campbell. The lecturer traced the evolution of the child as typified by the evolution of the race. While allowing some influence to environment and circumstances, as in the case of the late Professor Skeat, who beginning life as a popular and sociable country parson, was changed by an accident into a hermit and book lover and the foremost philologist of his age, yet each man shares with his fellow creatures potentialities inherited from the race, the result of the long race history stored in each child, developed or not according to circumstances, instincts and tendencies not due to limitation or example. In addition to family type a large inheritance is common to all the race, and the instincts of a new born babe grow with the growth of generations. Their growth has its analogue in the progress of man from savage life. First the burning desire to preserve life from the dangers besetting each human being, whence arose the fighting instinct, and with the desire of self-preservation went the desire to preserve the tribe, thus begetting resourcefulness and the appointment of efficient leadership, and the practice of making a home and implements out of raw materials evolved the sense of Creatorship, and therewith the sense of God. The child recapitulates the history of the race and education is useless unless it follows this growth, not pumping in but giving latitude and opportunity for self-expression. How few schools do this.

On November 11th there was a meeting at which Mrs. Pontifex gave an epitome of the lectures read at the Conference held in London—*Mrs. Janet E. Pontifex.*

NOTICES AND NEWS.

The Montessori Society announce a lecture on " Some Aspects of the Montessori System," by E. G. A. Holmes, Esq. (Author of " What Is and What Might Be "), at the Caxton Hall, Westminster, on Monday, February 24th, at 8 p.m. Tickets for non-members, 6d. each, may be got from the Secretary of the Montessori Society, 84, Eaton Square, S.W.

The Christian Commonwealth Editor will be glad to receive paragraphs on social, educational, and religious questions and happenings, and proposals affecting children. Address :—133, Salisbury Square, E.C.

An Enquries and Answers Section may be established in CHILD-STUDY if our readers desire this. The idea is that any inquiries sent in to the Editor should be inserted one month and replies to them invited. These replies, and perhaps others specially obtained, to be published the following month. Will those interested please send in criticisms, suggestions, and inquiries, to the Editor.

The Editor's thanks are given to those who have so generously sent him articles for publication, and

to the secretaries of the constituent societies who have sent reports. He asks for their forbearance in cases where he has had to use the blue pencil or postpone publication owing to the inexorable limitations of time and space. A complete article by himself has been crowded out. The Editor has an exceptionally lively sense of favours to come!

The Psychological Institute at Leipsic was founded in 1906, through the initiative of Herr Schulze, and is supported by a local association of elementary school teachers. In it were carried out most of the experiments described in the book on "Experimental Psychology and Pedagogy" (see Reviews). As Dr. Pintner (the translator) says: "This should prove a stimulus to British Associations to follow on the same lines. Only by making education a science can teachers hope to raise the status of their profession." Dr. Claparède mentions similar efforts in his "Experimental Pedagogy" (p. 23).

The Natural Method in Education is vividly exemplified in the letter of an enthusiastic teacher, who thus writes: "My kiddies and colleagues made a complete Montessori set [of the didactic apparatus] . . . We have some real snow around us, 5 to 6 feet deep in the school yard (drifts), and we've esquimauxed to some pattern this day: two large huts holding 15 kiddies each; oil swimming and supporting bits of string in flat clay vessels; sledges; and snow shoes . . . We worked in our shirt sleeves; every garden fork, spade, rake, and hoe in use."

Co-Education. Mr. F. E. Curtis informs us that in reply to a circular sent to "50 mixed Scotch secondary schools," 36 answers were received, and that these "seem to show at all events that in the opinion of the teachers on the teaching staff co-education works well in those schools both from an educational point of view and as a training for after life." Typed copies of the replies can be seen at the British Institute of Social Service, 4, Tavistock Square, W.C.

School Hygiene. The fourth International Congress on School Hygiene will be held at Buffalo, U.S.A., August 25th to 30th, under the patronage of the President Elect, Dr. Woodrow Wilson. The President of the Congress will be Charles W. Eliot, President Emeritus of Harvard University.

The Parent-Educators article (instalment) is from a Belgium paper published at Brussels and called *L'Education Familiale.* It is the journal of "The National League for the Popularisation of Practical, Pedagogical, and Sociological Sciences in Families"; a society akin to our "Parents' National Union." The writer is a professor at a Training College for Teachers. We hope, by the courtesy of the Editor and Author, to continue it.

N.B.—*Criticisms* on the new form, and the contents, of CHILD-STUDY, are requested. Hundreds of such (on postcards will do) are needed to secure changes. Silence means approval. Send remarks to the Editor.

REVIEWS.

Froebel's Chief Educational Writings. By Dr. S. S. F. FLETCHER and Professor JAMES WELTON. Edward Arnold. Pp. xx., 246. Price 4s. 6d. net.

This is an excellent piece of work, and its appearance most opportune. It gives in polished English a translation of all the vital parts of Froebel's writings on his doctrine of education, arranged in a connected form. In an able introduction the authors summarise and criticise Frobel's views, and "attempt to show the relation of Froebel to the general stream of educational thought." In view of the present controversy about the so-called Montessori method, all Free-Kindergartners, who think themselves Froebelians, should study this book, as should all teachers who do not yet know Froebel or have more or less forgotten what they knew of him.

Life and Work of Pestalozzi. By Professor J. A. GREEN. University Tutorial Press. Pp. vi., 393. Price, 4s. 6d.

Those who know and value Professor Green's *Educational Ideas of Pestalozzi* will warmly welcome this much enlarged and improved form of it. There is far more of Pestalozzi's own words (in translation), and the very valuable addition of the whole of "The Prospectus of Münchenbuchsee," and "The Report to Parents." Short of going to the original authorities this book provides all that is necessary for the understanding of Pestalozzi, and does this in an interesting and authoritative manner.

L'Année Pédagogique. Edited by L. CELLERIER and L. DUGAS. Félix Alcan, Paris. Pp. viii., 487. Price 7 francs 50.

The aim of this annual is to supply an analytical index to the pedagogical literature of the year in all countries. A total of 2,502 books, articles, etc., on education are enumerated and their contents briefly indicated. There is a subject index, an author's index, and five introductory articles on school and life, ideal and education, sympathy in education, psychological study of methods of teaching, and primary teaching. This is the first year of publication, and an admirable beginning has been made, on which we heartily congratulate the editors. It should become an indispensable standard work of reference.

Hand and Eye Training, or Education through Work. By H. HOLMAN, M.A. Sir Isaac Pitman. Pp. 206. Price 3s. 2nd edition, revised and enlarged.

In the preface it is said that "The chief aims of the author are: To set forth the most fundamental reasons which necessitate educational handwork. . . . to instruct and inspire the young handwork teacher . . . and to guide, not to satisfy, those who seek knowledge on the subject." The book it an attempt to set forth the scientific and practical principles of handwork under the following heads:

The hand develops the race; the body develops mind; views of educationists; scope and function of handwork; teaching methods; child-study and handwork; some suggestions for teachers. It is written from a child-study point of view.

The Montessori System. By Dr. Theodate Smith. Harper & Brothers. Pp. ix., 78. Price 75c.

This book gives a brief but clear re-statement of Madame Montessori's chief ideas and practices, and describes how her plans have been applied in American schools, and with what results. Miss Smith has exceptional qualifications for such a piece of work, and she has done it admirably. The practical teacher and mothers will find her book a most helpful guide.

Experimental Psychology and Pedagogy. By R. Schulze. Translated by Professor Rudolf Pintner, M.A., Ph.D. George Allen & Co. Pp. xv., 364. Price 15s. net.

This appears to us to be in every way an excellent book for the practical teacher who wishes to understand and to use experimental methods in scientific pedagogy. It is ably, simply, and clearly written and generously illustrated. The matter dealt with is that "necessary for teachers, normal students, and all those interested in the progress of education." After expounding methods of measurements, experiments on the following are described: Perceptions and ideas; feelings, the will; consciousness and attention; assimilation; the memory; apperceptive combinations; speech; physical work; mental work; and psychical correlations.

Concerning Religious Education. Pp. 182. *Method in Religious Education.* Pp. 134. *The Period of the Exodus.* Pp. 174. Teachers and Taught Text-Books; Friends' First-Day School Association. Headley Brothers. Price 1s. net, limp cloth; 1s. 6d. net, cloth boards.

The first of these small handbooks contains articles on the Bible, the Child, and the Lesson, by various authors. One of these, on the meaning of Biblical criticism, is a model of simple and lucid exposition. Most of the articles are too condensed and rhetorical to be of great value. Helpful lists of pictures, models and objects, books and maps are given. The second volume is by Mildred F. Field, B.A., who writes much that is good and helpful; but the greater part is too summary, vaguely general, and hortatory, to be of much use to beginners. The third volume, by S. Allen Warner, will practically assist those in sympathy with its point of view.

Herself; False Modesty; Confidences; Truth. By Dr. E. B. Lowry. Forbes & Co., Chicago. Pp. 208, 110, 94, 90. Prices: $1, 50c., 50c., 50c.

In each of these four books the most important subject of Sexual Hygiene is approached from a different individual standpoint, *viz.*, from that of the woman, the young girl, the parent, and the adolescent boy; but through each of them there runs the same guiding spirit that innocence does not depend on ignorance but on the right assimilation of knowledge.

The author is an American, and with American directness and impetuosity she plunges without hesitancy or equivocation "in medias res," where we in England are content to advance on more conservative lines. Some of us, for instance, may not think the time is ripe for giving young girls full knowledge of the horrors of the "Black Plague," and others may not think it advisable to inform little children of the kindergarten age "where babies come from, and the dangers of self-abuse," but to these lengths and further the fetish that ignorance is the source of all evil has lead the author of these, in many respects, excellent books.

Experiments must be made and sacrifices must be made in the pursuit of the knowledge of the best way of teaching sexual hygiene; but it occurs to us, as it may occur to others, that Dr. Lowry is attempting to advance "per saltum" and not by the orthodox slow stages of organic evolution. For instance, may there not be a danger of jeopardising the marital relationship, if young girls prior to marriage are gravely informed that social diseases latent or open in the husband are the chief causes of sterility and of diseases peculiar to women; and is there not a serious danger of young children becoming morbidly self-conscious, when they are admitted to the arcana of sexual matters at the early age of six?

"Herself," however, may prove a useful book for the sensible young married woman, or for the teacher who has the charge of young girls; and its companion volumes may have distinct merits from the point of view of the parents who wish to derive inspiration before they attempt to embark on the difficult waters of the sexual instruction of children.

The Diary of a Free Kindergarten. By Lileen Hardy.

The price of this book is 2/-, not 3/6 as stated in our January issue.

Publications Received.—*The Journal of Education; The Educational Times; The Parents' Review; L'Education Familiale; Educational Review* (U.S.A.); *The Pedagogical Seminary* (U.S.A.; *Child Life; Journal of Educational Psychology* (U.S.A.); *The Way of Worship*, by Miss Hetty Lee, M.A.; *The Conservation of the Child*, by Dr. Arthur Holmes; *Marriage and the Sex Problem*, by Dr. F. W. Foerster; *Music and Delight*, by J. D. Peake, B.A.

Child-Study.

The Journal of the Child-Study Society.

Vol. VI.—No. 2. MARCH, 1913.

EDITORIAL NOTES.

Investigation.—For our annual conference this year we ought to have the results of some practical investigations presented for discussion; so that the consideration of "Child-Study as a Link between the Home and the School" may have a scientific basis. Professor Earl Barnes has given us a hint of how to attack the question experimentally, in one direction (see our February number).

Who will take this up? Are there not some young teachers fresh from courses in the scientific study of experimental psychology and pedagogy, in the training colleges, who are able and willing to do such work? It is quite time that the younger generation of teachers should give some positive evidence that they have soundly profited by the advantages they have had in their training.

A Challenge to the N.U.T. and L.T.A.—In the February number of CHILD-STUDY we mentioned (see "Notices and News") the fact that the Leipsic Psychological Institute was founded, and is supported and worked by the elementary teachers in that town. If a few hundred teachers have sufficient enthusiasm, public spirit, and self-sacrifice to do such a work, what might be expected from the National Union of Teachers, with its tens of thousands of members (probably the largest and wealthiest association of teachers in the world) took up such a work?

It would doubtless be easy for it to get financial support and practical help from other societies. With the practical assistance of the London Teachers' Association it ought to be able to do work in experimental pedagogy which would be of world-wide value. We mention the L.T.A. because London has so many advantages as the place in which such work could be done.

THE BEGINNINGS OF SYNTACTICAL SPEECH.

A Study in Child Linguistics.

By WILLIAM BOYD, M.A., B.SC., D.PHIL.

It is a common mistake on the part of ignorant adults to regard the speech of children in the first few years of life as parrot language, echoing the utterances of older people. As a matter of fact, it is only in children of inferior mentality that close imitation of others is at all common. The striking feature about infantile speech is not its borrowed element but its essential originality and freshness. Listening to the chatter of an intelligent child of two or three, one cannot but notice the amazing ease with which the nascent mind makes itself at home in the complexities of language, and shapes them to its own ends in its strivings after self-expression. The discriminations and relations, the abstractions and generalizations, which characterise all proper speech, appear in the child's utterances in crude but unmistakeable forms which bear witness to the fact that there is an intelligence in the making behind them. And thus at an age when the powers of action are still feeble and sensuous accuracy has for the most part not been attained, the

child as speaker begins to show in a distinctively human way what manner of being he is.

It is evident from this that the study of child linguistics is a necessary part of the whole study of childhood. Unfortunately it is by no means an easy study, nor are the results of the work done in it always commensurate with the labour involved. The collection of children's vocabularies, the method which has been generally employed, though valuable enough as a rough and ready means of mental survey, does not really take us far on the road to a knowledge of the child mind. In such collections, rare words and common stand on a level of undistinguished equality, and all the significant distinctions of sentence structure and idiom have totally disappeared. We might as well seek for real insight into the genius of a people in the dictionaries of its language as hope to get any intimate view of the first workings of mind in the alphabetically arranged list of a child's words.

A more promising method, it seemed to me when I began to study the speech of my infant daughter, was to take sentences rather than detached words as the materials for analysis. With a view to this I recorded with exactness as much of her speech as I could in the last week of the twentieth month. In my collection, I included remarks made under every variety of circumstance, both monologue and dialogue, from the first waking words till the last words at night. The only deliberate omissions were the few cases in which her sentences were modelled directly on those of the people with whom she chanced to be speaking, and sentences which were merely mechanical repetitions of herself. By the end of the week I had noted down some 350 sentences. I repeated this note-taking in the last week of the 21st, 22nd, 23rd and 24th months, and in the end accumulated 1,236 sentences.

For purposes of comparison, I made a similar collection of 1,200 sentences in the last fortnight of the thirty-sixth month. The present study, however, refers primarily to speech at the end of the second year, and what is said about speech at the end of the third year is only intended to bring out more clearly the significant facts about the earlier period.

A. Sentence Structure.—I. *Short Sentences.* The first fact to be noted about the speech of the two-year-old child is the extreme brevity of the sentences. The average number of words in a sentence is 3.3, as compared with 6.5 words at three. For this brevity, there are several causes: the rarity of connecting words and of qualifying phrases, the absence of co-ordinate and subordinate clauses, the frequency of elliptical constructions.

II. *Connecting words.* The style is generally telegraphic. Here are two characteristic sentences. "Ask Daddy (to get) sweety (from the) man (for) Isa" (20th month). "That (is) money (for the) grocer" (21st month). The nursery rhymes suffered a similar process of abbreviation at this stage. Here, for example, is a version of *Old Mother Hubbard* in the 23rd month:

Old Mother Hubbard went
Get poor dog bone,
When got there cupboard bare,
So poor dog got none.

(In the examples given above, as in subsequent examples, I have supplied the missing words where that seemed necessary. No attempt has been made to imitate the infantile pronunciation). It is evident that the child has a better command of those parts of speech which have a concrete reference than of relational words. Prepositions and conjunctions are usually omitted. In the 4,137 words comprised in the collection of sentences, there are only fifty prepositions and seven conjunctions. The articles, especially "the," are also rare, occurring only 57 times. There are 19 auxiliary verbs and the "to" of the infinite is used 10 times.

How deeply this affects the form of the child's speech will be evident from the fact that the minor parts of speech at two only constitute 3.8 per cent. of all the words used, whereas at three they account

for 25 per cent. of them. The significance of this is brought out by a comparison of the percentage of words *other than* articles, auxiliaries, prepositions, conjunctions and interjections, used at two and at three.

	TWO.	THREE.
Nouns and pronouns	44.7	42.8
Verbs	28.7	30.1
Adjectives	12.8	14.7
Adverbs	13.8	12.4

The smallness of the difference is surprising.

III. *Qualifying Phrases.* The scarcity of prepositions, besides being directly responsible for the shortness of sentences, has an indirect effect in so far as it makes it difficult to qualify nouns and verbs by the addition of prepositional phrases. The prepositional phrase modifying a predication is found in rudiment, *e.g.* "Get more milk (from the) farm," but there is no facility in the use of it. A sentence, such as, "Why is mother coming with me into the woods?" such as is fairly common in the 36th month, is not to be found at all at the earlier time. Thus while the percentage of this kind of adverbial qualification (calculated on the total number of sentences) is 34 at three, it is only 13 at two.

IV. *Subordinate Clauses.* Even more important than the scarcity of prepositions is the scarcity of conjunctions. In the absence of conjunctions there can of course be only simple sentences. Relations of co-ordination and subordination may be implied but they cannot be expressed. In point of fact, there are only four cases of co-ordination in the report of the two-year-old child's speech: the connection being made in one case by "and," in another by "then," and in the other cases being unexpressed. It is interesting to note that rudimentary subordinate clauses without any explicit conjunctions are fairly common: *e.g.* "Think Peter (the cat) want in," "Wait (till the) eggs (are) in," "Mother need get gum—sort it." Altogether there are three relative, 13 noun, and 29 adverbial clauses, of this type.

V. *Elliptical constructions.* So far we have been considering the omission of speech forms like prepositions and conjunctions, which, though of great importance in the structure of developed speech, are not logically essential in predication. When we come to consider the more fundamental elements of the sentence, we find in the child the same tendency to eliminate all the words that can be left implicit.

Even ignoring the omission of articles, auxiliaries, prepositions, conjunctions, and interjections, only 30.6 per cent. of all the child's sentences are fully expressed predications, with subject and predicate complete; and that includes 3.6 per cent. of a curious construction, half-indicative, half-imperative *e.g.* Mother pull off wee balls. (The sentence may be punctuated either with or without a comma after mother according as the imperative or the indicative meaning is considered the more fundamental. It is worthy of note that this construction is most common in the 20th month and becomes steadily less common in the succeeding months).

To this perhaps should be added 14.3, the percentage of imperatives which, though elliptical, are normally so in adult speech. But it should be pointed out, as indicating an important peculiarity of infant speech, that this percentage is far in excess of that of a year later, when imperatives form no more than 6.5 per cent. of the whole number of sentences, and even then are more common than in the adult.

This leaves 55.1 per cent. of abnormal elliptical sentences to be accounted for. Of these, 20.2 simple lack the copula: *e.g.* "That (is) hot milk," "Isa (is) going to clap wee Peter."

In 4 per cent. the verb is wanting: *e.g.* "Book (has fallen) down." "(Give me) wee balls off." "Nice wee pony, man got nice wee pony." Sentences like these, which lack the verb, are few and tend to become fewer with increasing mastery of language.

Finally, there is the large and important group of sentences in which the subject is

the chief word lacking. In 20.8 per cent. only the subject is omitted: "(Isa) run see mother." In 10 per cent. the copula is also omitted: *e.g.* "(It is) hot." "(Isa is) coming down (her) self." It is worthy of note that unlike most of the elliptical constructions mentioned, the omitted subject becomes increasingly frequent over the period of observation. 20th month: 16.6 per cent. 21st month: 19.4 per cent. 22nd-24th months: 24.9 per cent. The reason for this may perhaps be found in the fact that in a large proportion of cases the speaker herself was the subject, and that pending the relief from the constant repetition of her own name by the use of the personal pronoun in the course of the third year, it was found easier and more agreeable to omit the subject altogether. There is, however, one fact which seems to throw doubt on this interpretation. In some 20 sentences the predicate comes first without the implicit subject, and following on this is the complete sentence: *e.g.*, "Cold, Isa cold." "No like Peter, Isa no like Peter." An idiom of amplification akin to this occurs quite commonly in the speech of this age. In 48 cases, other than those referred to, an elliptical sentence was first given, and then corrected by the complete form, as though the complete form were only reached by an effort and with the help of the easier elliptical form: *e.g.*, "Door opened, this door opened." This might be taken to suggest that the personal subject is occasionally omitted for a similar reason. Against that view, however, is the fact that the percentage of omissions increased as time went on. This difference between the two cases favours the former view.

THE PSYCHOLOGY OF MATHEMATICS.

By William Brown, M.A., D.Sc.

The psychological problems involved in any detailed consideration of the nature of mathematical reasoning are numerous and complex, and it is impossible in one short paper to do adequate justice to all of them. The more important of them, those which I can alone consider this evening, fall naturally under three heads, and my paper will therefore consist of the following three sections:

A. A brief consideration of the nature of mathematical ability in its most general aspects, its connection or lack of connection with other forms of mental ability, its hereditary transmission, the conditions which favour its exercise, and similar problems.

B. A psychological description of the way in which, and the conditions under which, ideas of *number* appear and develop in the young child. Reference will also be made in this section to experimental investigations that have been carried out upon adults with the object of determining the conditions which influence the process of *counting*.

C. A description of one or two recent statistical investigations on the inter-relations of different forms of mathematical ability and elementary mathematical processes among themselves. This will entail a brief explanation of the meaning of the terms "correlation" and "partial correlation" as used in their mathematical and technical sense; and the feeling may possibly arise in my readers' minds that I am giving them a "mathematics of psychology" rather than a "psychology of mathematics." The description may be found to be lacking in interest, but in that case the fault will most decidedly be my own and not due to the nature of the problem itself.

A. [In this section I have derived much help from a very interesting chapter, "Die Anlage zur Mathematik," contained in Dr. W. Betz's monograph entitled "Ueber Korrelation," Leipzig, 1911.] The relation of mathematical ability to general intellectual ability is a very difficult problem. Some psychologists would deny the existence of any such entity as general intellectual ability entirely. Without going so far as this, we may well ask for a much more complete psychological analysis of it than we at present possess before committing ourselves to any views as to its relation to other forms of ability.

The truth is, we are still very far from clear as to the exact manner in which the *process of thinking* goes on. We do not yet possess any satisfactory psychological account of thought. One fact that has been definitely placed beyond doubt by recent experimental investigation is that men do not as a rule think syllogistically. In this respect therefore the logical systems of Aristotle and his modern representatives give us little help, and may even be misleading. It also seems clear that thought may occur without mental imagery of any kind. But what exactly are the positive psychological characteristics of thought we do not know.

In the view of the "plain man," an intelligent person is one who is able quickly to adapt himself to new circumsatnces, especially to adjust his ideas in relation to new objects, one who possesses in a marked degree the power of analysing a new and complex situation and discovering its more important implications. There remains the question whether this power is a general one, functioning with approximately equal facility (ceteris paribus) in relation to all kinds of objects and situations, or whether it is in its very nature specialised and tied down to definite objects and situations. The solution of this problem will most likely be obtained, if at all, through *objective* methods of enquiry, especially those statistical methods now so much in vogue among psychologists. In any case, we can say that our objective knowledge of the nature of intelligence is more satisfactory than our subjective knowledge. We are more clear as to *what* intelligence does than as to *how* it does it.

Current opinion is in favour of a close relationship between mathematical ability and general intellectual ability. In school the former is generally considered a reliable test of intellect, and even in after-life it is regarded with respect. Nevertheless there have been many men of exceptional mental ability (quite apart from their genius), such as Kant and Goethe, who have experienced the greatest difficulty in learning mathematics, and conversely many eminent mathematicians have been markedly deficient in intellectual ability in other directions. Again, as Dr. Betz points out, great mathematicians seem always to have been more numerous than great historians, politicians, or philosophers, so that the ordinary view is probably too extreme.

There is good reason for thinking that school-mathematics and higher mathematics relate to different forms of ability and should be clearly distinguished from one another in reference to our question. The former is probably a better measure of general intelligence than the latter. Even in the former, the unmathematical and mathematical boys of equal general intelligence, although perhaps equally successful in mathematical routine work, apperceive it in different ways. In working problems in geometry and algebra, it is neither syllogistic argument in the one case nor a mere permuting and combining of symbols in the other that mark the procedure of the genuine mathematician. It has even been suggested that "school-mathematics would be taught more mathematically, had Euclid been a better mathematician and less acute logician." Typical mathematical reasoning is better exemplified in so-called "Higher Mathematics," involving the Differential and Integral Calculus. The well-known German mathematician, Prof. Felix Klein, of Göttingen, has defined mathematics as essentially "funktionales Denken," or thinking in terms of functions, which is identical with the reasoning of the Calculus. One quantity is thought of as varying continuously with another or a number of others according to a certain rule. I am myself inclined to think that this is true only of algebraical or analytical reasoning, and does not apply to the more intuitional methods of geometrical reasoning. That the two forms are distinct has been held by many mathematicians, especially by the late Henri Poincaré, and experimental evidence for it will be adduced in a later section of this paper. I should, however, agree with Dr. Betz in the more general view, which he holds,

that mathematical talent probably consists in an exceptional ease in carrying out certain thought-processes, which need not be identified with a special and, as it were, fundamental ability, though it does not exclude such a view. Betz writes : " The mental situation shows a certain similarity to the case where one seeks in a visual memory-image to seize and hold fast certain details of which there is at first only the slightest trace visible, only in mathematical thinking it is not a question of visual memory-images but of peculiar presentations or ideas which are felt rather than seen and which in another connection [" Vorstellung und Einstellung," Archiv. f. d. ges. Psych., 1911] I have called *minimal ideas*. I believe I can show that the mathematical type of mind is characterised by a special clearness of these minimal ideas, and by the ability to vary them with precision ; whether this also involves a special logical ability cannot be decided, so long as the psychology of inference remains shrouded in obscurity " [Op. cit. p. 74].

As a point of some interest, it should be noted that many good mathematicians have been weak in arithmetical calculation.

An extensive enquiry has been made by the German psychologist Möbius [P. J. Möbius : Franz Joseph Gall, Leipzig, 1905] into the relations between mathematical ability and the shape of the head. According to this investigator the relation is a definite one, mathematicians showing prominences over the outer parts of the eyebrows, that on the left side being as a rule the more pronounced. Möbius publishes portraits of distinguished mathematicians which show this characteristic clearly marked, but it has been reasonably objected that his argument could only lay claim to cogency had he also given portraits of non-mathematicians of high intellectual ability and been able to show that the prominences were absent in these cases.

Even if the correlation were satisfactorily demonstrated we could not infer from it the existence of a " mathematical organ " in the brain corresponding to the prominence. The known facts of cerebral localisation are all against such a view. We could only regard the relation as the result of correlated variations, accumulating in the course of evolution.

An interesting investigation into the method of working, etc., of mathematicians has recently been carried out by Monsieur H. Fehr [H. Fehr : " L'Enseignement Mathématique," Paris, 1905, 1906]. He employed the " questionnaire" method, sending out a list of thirty questions to about one hundred eminent mathematicians. Among the results he obtained are the following :

1. Interest in mathematics generally appears before the sixteenth year (84 per cent.), although it may develop as late as the twenty-sixth year.

2. In two-thirds of the cases mathematical ability ran in the family, being inherited four times more frequently on the father's than on the mother's side.

3. Preferences for geometrical and analytical methods occur with almost equal frequency.

4. " Inspiration " often occurs among mathematicians, especially after sleep, but is not a universal occurrence.

5. Mathematicians are as a rule very fond of walking, and take a great interest in music and in religious questions.

6. With one single exception (Boltzmann) the mathematicians interrogated found alcohol more of a hindrance than a help in their work.

In concluding this section, I may say that the balance of evidence seems to be in favour of the existence of a special capacity or faculty underlying mathematical ability, distinct from, and with no essentially close connections with, other forms of intellectual capacity. [*Etc.*]

MARIA MONTESSORI'S METHOD OF SELF-EDUCATION. II.

By Madame M. L. Pujol-Segalas.

III. *How can this be done? How can we learn to respect the spiritual freedom of the child?* It is simple enough if we pay attention to it, provided we, the

parents and teachers, have practised humility, self-control, patience, discrimination, and unselfish love, without which there is no justice possible. These you must have, and you will understand what we are trying to do in the children's houses.

Montessori methods of self-education are such because they do not admit of any pretension on the part of the teacher to educate the child; they rather consist in placing the child constantly in the most favourable circumstances to educate himself. The Bordeaux group of the "Ligue de l'Education Morale de la Jeunesse," from an account of its July meeting sent us by the Secretary, M. G. Persigout, divides child's life into four periods, according to its most prominent features in manifestation for the majority of cases: Up to three years, emotional; from three to seven, spontaneous; from seven to nine, reflective; from nine to twelve, intellectual.

The second stage seems to be the most important one. From three to seven, if the child is properly treated, there is 1st a growing tendency to the manifestation of individualised consciousness, that leads up to a more or less perfect development of the reflective faculty. At the end of that period, the building faculty asserts itself, and the sense of responsibility begins to appear, that is, if the little man or woman has been allowed to make his own experiments, individual and social. And my conviction, founded on experience, is that when people change their methods, that will happen more constantly and at an earlier age. 2nd. Language is established at the same time as relations between objects, also between object and subject. There ought to be a remarkable unfolding of intellectual powers, particularly of the powers of observation and classification, which one may call the scientific spirit. That is likely to be so, if we are satisfied with careful watching, without making any attempt to stifle.

These four years (three to seven) will prove very largely decisive; that has been acknowledged long ago, and emphasis has been laid upon it by the Jesuits, who are good educationalists, in their way, according to their conception of life and the world as I imagine. 3rd. Physical growth is more rapid then, as a rule, than at any other period, and therefore the discipline of immobility and discomfort more prejudicial to the body. This is important, and the child must be allowed to change his position, sit down, walk or lie down, when he feels inclined, for the sake of his health. Moreover, these comings and goings can be taken as an opportunity for making him feel the advantage of orderly over disorderly movements; and to make him appreciate the wholesome pleasure of action and the fatigue always resulting from mere agitation.

Now there is a point on which stress must be laid. At this age we have such a chance, as will never again present itself, of finding out the innate tendencies of the child, to get an insight into the possibilities and requirements of his particular nature, we may already perceive what will constitute the lights and shades of his character as a man or woman. We can deserve now the privilege of helping him to develop all that is best in him, to the exclusion of the worst, by being careful to entertain his full faith and confidence in us, his directors. Be sure he will manifest himself clearly to a good observer, when he is neither frightened into silence and immobility, nor coaxed into doing what he had no personal wish to do. Take care not to make of him a dissembler, and while you reflect on the promises and dangers of the energies specialised in his individuality, bring him gradually to realise them also, so that he becomes willing to control such forces within, which he is already becoming aware are not himself.

That it is possible to attain this, I can assure you. I have been experimenting in that direction for several years with my own daughter and nephews, and for nearly three years in the Children's Houses in Rome and in Paris, and I have often registered wonderful transformations. Every day I am gathering records

that may contribute to show what moral education should be at that age, in the family and at school. Some of these I may offer to your consideration on some future occasion, or presently, in answer to precise questions, that any one may like to ask.

In France the moral aspects of education have suffered somewhat, it seems, from the old wranglings between religious and lay educators. On the other hand children of our race are rather well gifted with regard to sensorial abilities leading to professional efficiency, and with regard to clearness of perception, which is at the foundation of the logical faculty and of some sorts of intellectual development. This is why I feel inclined to lay greater stress, as a Frenchwoman, on the ethical results that could be achieved in the Children's Houses by means of these methods of self-education. Many are getting into the habit of calling them "Montessori methods," and, I think, rightly, because she was the first to apply them scientifically and with real efficacy to large groups of little children.

IV. *I am not sure whether you do not expect me to describe the didactic material that we use.* However, I know that this has been done before to-night by well-informed and enthusiastic lecturers. You may even have seen parts of that material, or at any rate the pictures illustrating the fine volume of pedagogy translated into English by Miss George. Besides, to enter into useful details concerning it, it would take at least a series of about ten or twelve lectures such as I gave last year in Paris. For these reasons I shall mainly endeavour to show you how precious this material is to us. I cannot imagine anything that would permit such savings of energy both on the part of the child and that of the mistress.

Whenever we have material to use, in most cases, no spoken demonstration is necessary, before, during, or after the exercises. The material, in its simplicity, is self-demonstrating, it makes it easy for the child to get clear notions of size and dimensions, shapes and geometrical figures, colours and shades, weights and numbers; and all this as much as possible before he is acquainted with the words that serve to represent all such notions. We see to it afterwards, or immediately after, that the proper vocabulary is applied, but never do we suggest a word before making sure that the child wants it, because it corresponds to a conception already existing in his mind. No tedious repetition of meaningless words, therefore, which makes it difficult for one to fix one's attentions, and which might assist the formation of the absurd, as well as dangerous, habit of speaking without anything to say.

Beside saving the breath of the lady-friend (we don't care to be called teachers, we prefer the title of friend; at least I do, and my little ones in Paris call me Mamie), the material has made it sufficiently easy for the child, better than the mistress could have done by any speech of hers, to analyse for himself all sensations and perceptions that come to him through the senses. Thus is he helped in the work of classification, which often is hardest to him than any, and in consequence often remains undone, later than we suspect. To the chaotic, bewildering state of his mind, succeeds a state of order far more agreeable to our baby, more favourable also to the acquisition of new knowledge, which will not prove cumbersome and confusing, because it will at once adjust itself to previous precise notions of states and qualities, and of their relations to one another.

In these conditions there is not so much need for us afterwards to direct the child's attention constantly on this and that part of his surroundings. He does it of his own accord, because he enjoys making new discoveries; because comparison has become possible for him, from the first, through a skilful presentation of similar and contrasting objects; and because he has learnt by experience that concentration of one's attention on some particular object, or group of objects, always brings its immediate reward in the sense of an enlargement of his consciousness. For

that, as a rule, he cares more than for anything else, excepting perhaps the sympathy and comprehension of the elder friend and companion, which he is sure will never be missing.

V. *Our children also learn reading and writing, and there has been much talk about it.* Some mothers were delighted at the idea that their child would accomplish the feat of learning to read and write in less than two months; others saying that there is no need to hurry so: it would involve too much fatigue, and there was the danger of turning the little mites into book-worms. Well, hurry of any sort is always bad, and I don't see why a child should learn reading and writing before six, unless he can learn more easily and better at four or five, and that seems to be the case with our system.

Consider that looking at the sand-paper letters, and touching them, is just about the same sort of exercise as examining and fingering the geometrical insets, and it is evidently much to the taste of our little ones. Representing sounds by letters is, after all, only the result of a very simple association of two sensations: auditive and visual. The further fact of associating a special image or idea with a group of such sounds, or graphic signs standing for them, has already occurred in the acquirement of the spoken language. It is nothing new to the child; and besides we have no desire to press the child forward to that or anything. We rather insist on this point, that too much or indiscriminate stimulation is contrary to the harmonious development of humanity.

It is nearly always the children themselves who express a wish to compose words, in order to read them afterwards. Even when they can read we do not give them books before six or even later; and they do not ask for them unless they have been told at home, or by some little friend, that it is more dignified to have books, and that boys and girls have some in "real schools." As to the danger of becoming book-worms, I think it does not exist, because a child is capable of reading, but rather on account of his being incapable of taking a deep interest in all the life by which he is surrounded.

A little French girl of my acquaintance could read French perfectly well at four; now she is eight, and she reads and writes English as well as French, yet she does not care much for books; people and things are for her so interesting to watch: there is so much to see outside, so much to remember and enjoy anew, when one happens to be alone.

Another objection has been made as to the difficulty of translating sounds into graphic signs, after the manner used in the Italian "Case dei Bambini," with such spelling as we enjoy in French and in English. In spite of all orthographic anomalies, I do not see much advantage in the synthetic presentation of entire words to the child from the very beginning. Our native tongue still remains very largely phonetic, though it is true that one sound can often be represented in several ways, and two or more letters may be required to represent only one emission of the voice. My experience with our Parisian boys and girls brought me to the conclusion that there is a way of learning to read which would do away with much of the tediousness of lessons in orthography, rendering them altogether unnecessary.

I remember all the trouble French spelling gave me as a girl, but I had not to suffer in the same way when I taught myself English some years after in this country, the methods used being different. However, learning to read English or French, if it is done in the right manner, so as to prevent orthographic difficulties later on, ought to take more time than in the case of Italian, as long as those languages preserve their actual mode of spelling.

VI. *You are probably thinking of practical difficulties, and wondering what number of children might be guided after our method, by one or two mistresses.* That is a difficult question to answer, for the reply depends on many factors. Nationality perhaps is one: I have had Italian children in Rome, French, English,

Americans in Paris. I find that my little compatriots are much more exhausting at first. They require a great deal more supervision at the beginning, because the French are of a very nervous temperament, and also, I believe, because they are made a great deal too much fuss about when they are at home. Lots of scolding or caresses is the worst preparation that could be devised for self-education.

Another important factor would be the social standing of the children's families. Poor children, as a rule, give us much less trouble in a way; they are more independent. Those on the contrary, who have had too many persons to look after them, are often quite helpless and incapable at first of taking an interest in anything by themselves, unless they happen to be very clever children indeed.

Finally, there is to be considered the individuality of the little pupil, and its particular stage and line of development. In our school of the Champ de Mars, we enjoy the finest variety of temperaments that you can imagine, many of the conscious wilful type, such as might become rebels or anarchists, unless they develop into fine, self-sacrificing personalities, devoted chiefs and leaders of the half-conscious majorities. These are more difficult to deal with but also more passionately interesting to observe. With them new problems arise every day, and indeed it is right to say that they teach us more about human nature than we can help them to learn of any subject. At present we have twenty-five pupils in one class, before the end of the coming term there is every chance that we shall have thirty at least, and I am certain that one mistress, helped by a maid, will have no trouble managing them, especially as they were not all new together. To the popular classes I should admit forty, and I don't think that this number ought to be increased, under any system that cared for positive results.

VII. *Before concluding, I would mention that Montessori scientific pedagogy is along the same lines as the educational conception of my great countryman, Dr. Gustave Le Bon.* According to him, education has for its aim to transfer into sub-consciousness, as a permanent faculty, any power attained in consciousness, by an effort of the will. Indeed, education can be nothing else. From this, it is easy to derive what will be the true function of the educator.

By dint of repetition, a newly-acquired power will become a faculty. The repetition may be spontaneous on the part of the person educated, or it may be compulsory, but if the latter case be too frequent there will certainly ensue a weakening of the will and of the creative faculty in general. Perhaps you will agree that this is a disadvantage which can hardly be compensated by any immediate gain on other grounds. Let us not be too anxious to manage the child, so that he may feel the need early to manage himself; let experience, before its perils be too great, lead him to understand the necessity of practising self-control.

Our actions then will consist: First, in taking care of the surroundings and atmosphere of the place, their influence on the child being all the greater in that he is unconscious of being exposed to it; and in providing simple, logical, appropriate apparatus which our little ones may freely use. Secondly, in observing them constantly, but without forcing ourselves in their way. A word now and again, a look of encouragement or of painful surprise, or simply an interrogative glance, a light motion of finger, will often be sufficient to awake or to recall the children's attention to inner or outer phenomena.

No more is required in ordinary cases, provided the children come to us at about two or three years. After that age the difficulty would be increased; other methods would have been applied, or no method at all; bad habits would have to be changed, requiring for a while special training not so pleasant or desirable. I mean that mental hygiene would no longer be sufficient. Something of the nature of the medical and even surgical processes would have to be adopted for a period of

transition. As psychologists, we tell you what physicians have been repeating constantly in this century: Don't wait until your children are ill, to take care of their health. This is true of the mind, as well as of the body.

I shall add just a few words of warning to those who may undertake an application of these methods. They must be prepared to put up with some disorder and perhaps a little noise at the beginning, which, of course, it would be open to them to stop at once. But that would mean returning to the old way; it would lead to suppression, not education. In order to succeed, one must have faith in human nature; one must be capable of waiting patiently and with a quiet assurance, for if you are impatient to see results, you may almost be sure they will never come at all.

I hope I have said some of the things you wanted to hear, and none that have shocked you too much. I trust we are all willing to learn as we all can learn from one another, and whenever educators, conscious of their responsibility, meet together to talk of their work, each ought to impart to the other new courage when there is no possibility of imparting new light. Therefore I say to you in conclusion, let us all strive and do our best, each applying the method that seems best to him, and then the children are sure to be greatly benefited.

THE MONTESSORI METHOD: ITS PRINCIPLES AND PRACTICES. II.

By Robert R. Rusk, M.A., B.A., PH.D.

ii. *Sensory Exercises.* In the Montessori scheme of exercises in sensory training we have an illustration of a principle, not infrequently exemplified in the history of science, that very practical consequences may be the outcome of speculations regarded as quite abstract or theoretical. The tests which psychologists and experimental educationists have applied in determining sensory acuity and general intelligence have frequently been condemned as having no bearing on school practice; yet it is to these very tests and to the apparatus employed in applying them that Dr. Montessori has turned for her exercises in sensory training.

The standpoints of experimental psychology and of sensory education are nevertheless different. Experimental psychology seeks to determine by a process of measurement the actual condition of the sensory powers: it does not attempt to improve the powers, whereas Dr. Montessori is not interested in measuring the powers but in assisting their development. In the application of the tests by psychologists, especially when the investigation extends over a long period, practice-effects frequently disclose themselves. Such practice-effects are to the psychologist disturbing factors which he attempts to eliminate, but it is just these practice-effects that sensory education seeks to secure.

The psychological methods of determining sensory acuity and sensory discrimination had been applied by Dr. Montessori in training the feeble-minded. In applying them to normal children she found that they required modification. With deficient children the exercises had to be confined to those in which the stimuli were strongly contrasted; normal children can, however, proceed to finely graded series. Normal children manifest great pleasure in repeating exercises which they successfully accomplish; deficient children when they succeed once stop and show no inclination to repeat the task. The deficient child, when he makes mistakes, has to be corrected; the normal child prefers to correct his own mistakes. The differences are summed up by Dr. Montessori in the statement that the didactic material which, used with deficients, makes education possible, used with normal children, provokes auto-education (p. 169).

In sensory training Dr. Montessori believes in isolating the senses whenever that is possible (p. 179). This procedure, it will readily be inferred, is adapted from the education of physically deficient children. Blind people, it is popularly assumed, acquire a very fine perception of

touch. We are not surprised then to find that in the training of their tactual sense the pupils of the Montessori schools are blindfolded, a feature of the training which seems to add zest to their efforts. The auditory exercises are likewise given in an environment not only of silence, but even of darkness.

The *material* used in the sensory training recalls the apparatus of the psychological laboratory. Graded series of coloured wools are employed to train the colour sense; a highly polished surface and a surface of sand-paper for the sense of touch; tablets of wood of similar size but different weight for discrimination in weight; for the temperature sense, little metal bowls with covers and with thermometers attached; for auditory acuity, cylindrical sound boxes containing different substances; for perception of size, series of wooden cylinders varying in height only, in diameter only, or in both dimensions at once, blocks arranged in a regular series and rods of regularly graded lengths; for perception of form, geometrical insets in metals, wood and paper.

The *procedure* adopted may be illustrated from the method followed in the training in colour discrimination. Dr. Montessori accepts from Séguin the division of the lesson into three periods or steps (pp. 177-8): 1st period: The association of the sensory perception with the name. For example, we present to the child two colours, red and blue. Presenting the red, we say simply, "This is red," and presenting the blue, "This is blue." Then we lay the spools upon the table under the eyes of the child. 2nd period: Recognition of the object corresponding to the name. We say to the child, "Give me the red," and then, "Give me the blue." 3rd period: The remembering of the name corresponding to the object. We ask the child, showing him the object, "What is this?" and he should respond, "Red."

To these three periods of Séguin, Dr. Montessori has added a preparatory series of exercises which contains the real sense education (p. 178); the acquisition of a fineness of differential perception, which can be obtained only through auto-education. It consists in matching or grading series of colours. For this purpose a series comprising sixty-four colours are used and the arranging and grading of these provide training in sensory discrimination before the naming method is applied.

This procedure follows the methods used and discussed by Preyer and Baldwin for testing the colour vision of children; but, as we have already indicated, instead of using the methods for testing Dr. Montessori employs them for training the sensory activities of her pupils.

Similar methods are adopted in developing in the child tactual acuity, and in training the child in discrimination of temperatures and of weights. In these exercises the child is blindfolded or is enjoined to keep his eyes closed during the tests; he is encouraged to do so by being told that he will thus be able to feel the differences better.

The exercises which assist in the development of perception of form play such an important part in the Montessori system that the training in knowledge of form may be briefly traced here. The first exercise is to sort out of a heap bricks and cubes. Young children come to recognise the forms of these merely by grasping them; they do not require to touch the contour. This exercise is performed with various materials, for example, coints, etc., and so expert do the children become that they can discriminate between small forms varying very slightly, such as corn, wheat and rice (p. 190).

The real training in the perception of form begins, however, when the child passes to the exercises of placing wooden figures in spaces fitted to receive them, or in superimposing such figures on outlines of similar form.

Geometric insets of various designs, the initial ones strongly contrasted, the later ones merely dissimilar forms of the same figure, for example, of the triangle, are mixed up and have to be sorted out by

the children and fitted into the frames made to receive them. The frames furnish the control necessary to test the accuracy of the work. Ordinary solids, *e.g.* cubes, spheres, prisms, are not employed as is usually the case in the teaching of form, but instead insets representing solid objects with one of the dimensions greatly reduced and with the two dimensions determining the form of the plane surface made most evident (p. 238); the reason for this being that the choice of material is determined purely from the pedagogical standpoint, and that the objects most commonly met with in practical life, table-tops, doors, window frames, etc., are of this nature.

In learning to fit the geometric insets into the spaces provided for them the child not only uses the visual sense but also the tactual and muscular senses; he is taught to run the index finger of the right hand round the contour of the form and to repeat this with the contour of the frame into which the inset fits. It is frequently observed that children who cannot recognise a figure by looking at it, do so by touching it. "The association of the muscular-tactile sense with that of vision," Dr. Montessori maintains (p. 199), "aids in a most remarkable way the perception of the forms and fixes them in memory." In this procedure we have Berkeley's theory of vision applied pedagogically.

From the exercises with the solid insets in which the control is absolute, the child passes to exercises in the purely visual perception of form. The wooden insets have to be superimposed on figures cut out of blue paper and mounted on cards. In a further series of exercises the figures are represented by an outline of blue paper, which to the child represents the path which he has so often followed with his index finger. Finally he is required to superimpose the wooden pieces on figures whose outlines are represented merely by a line. He thus passes from the concrete to the abstract, from solid objects to plane figures represented merely by lines and perceived only visually.

Through these exercises the characteristics of the various figures, circles, ellipses, trianges, rectangles, come to be known, and when the need for them is manifest, the names are given. As no analysis of the form is undertaken, no mention made of sides and angles, it may legitimately be affirmed that the teaching of geometry is not being attempted (p. 236. For teaching of geometry, see p. 243).

The method adopted in developing the perception of form, involving as it does the extensive employment of tactual and motor imagery, prepares the way for the teaching of writing and of other didactic processes; but before considering these it may be weil to attempt an estimate of the value of sensory training in the education of the child.

One cannot deny without actual experience and investigation but that young children can be brought to a high degree of proficiency in grading colours, etc., but if it is thereby implied that the power so developed can be transferred to other forms of work, the assemption is not supported by recent experimental investigation in other spheres of mental work. Indeed, a high degree of training in some one form of mental activity may prejudice the training of a closely related function. To the practical exercises in Dr. Montessori's system this objection does not apply for the power acquired by the child through these exercises can be utilised directly in everyday experiences, nor does this objection hold against such exercises in sensory training as directly subserve the didactic processes of writing, etc., but of a specific training of the sensory powers for its own sake one may be allowed to question the value.

Dr. Montessori, with that modesty which characterises all great and original workers, does not claim to have brought to perfection the method of sense training as applied to young children, but believes that her method opens a new field for psychological research, promising rich and valuable results (p. 215).

iii. *Didactic Exercises.* It is to the

results obtained in the didactic processes of writing, reading, etc., that the Montessori method owes its popular interest, but at the inception of the method these processes were not intended to be included, and results came, as it were, unsought.

In the Montessori system the teaching of writing precedes the teaching of reading (p. 296). Dr. Montessori maintains (p. 266-7) that in normal children the muscular sense is most easily developed in infancy, and this makes writing exceedingly easy for children. It is not so with reading, which requires a much longer course of instruction, and which calls for a superior intellectual development, since it treats of the interpretation of signs, and of the modulation of accents of the voice, in order that the word may be understood. And all this is a purely mental task, while in writing to dictation the child translates sounds into material signs and performs certain movements, a thing which is always easy and pleasant for him. Writing develops in the little child with facility and spontaneity, analogous to the development of spoken language, which is a motor translation. Reading, on the contrary, forms part of an intellectual culture, which is the interpretation of ideas from graphic symbols and is only acquired later on.

Writing. To her predecessors, Dr. Montessori owes little in regard to the teaching of writing except by way of warning. The apparatus used by Séguin with deficient children was found inconvenient, and of his method she says: "We have Séguin teaching geometry in order to teach a child to write" (p. 256).

In accordance with her general principle, Dr. Montessori adopts in regard to writing what we have termed the psychological standpoint. "Let us observe an individual who is writing and let us seek to analyse the acts he performs," she suggests, and again: "It goes without saying that we should examine the individual who writes not the writing; the subject, not the object."

The procedure followed in the teaching of writing emerged from the experience of teaching a feeble-minded girl to sew. Dr. Montessori discovered that weaving Froebel mats enabled this girl to acquire such control over the movements of the hand that she could take up sewing which she had previously been unable to perform. The general principle which she deduced from this was, that "preparatory movements could be carried on, and reduced to a mechanism, by means of repeated exercises not in the work itself, but in that which prepares for it. Pupils could then come to the real work, able to perform it without ever having directly set their hands to it before" (p. 261).

Writing, according to Dr. Montessori's view, is not a mere copying of head lines, but significant writing, writing to dictation. In this are involved two diverse forms of movement, the movement by which the form is reproduced and that by which the instrument of writing is manipulated; in addition, for writing to dictation there is also necessary the analysis of spoken speech into its elements. Preparatory exercises for each of these factors must, in accordance with the general principle just stated, be devised and practised before writing is actually commenced.

As the children had already learned to know the forms of the geometric insets by running their fingers round the contours, so to teach the forms of the letters it occurred to Dr. Montessori to get the pupils to trace with their fingers the outlines of letters cut out in sand-paper and pasted on cards, the roughness of the sandpaper providing a control for the accuracy of the movements (p. 276). "The children," indeed, "as soon as they have become at all expert in this tracing of the letters, take great pleasure in repeating it with closed eyes, letting the sandpaper lead them in following the form which they do not see." Thus the forms of the letters are learned and impressed on the minds of the pupils not by mere visual analysis and visual imagery, but by tactual and motor experiences and tactile-motor imagery.

The phonetic sounds of the letters are taught at the same time as the tracing, the steps in the lesson following the three

period arrangement already illustrated. The audito-motor imagery helps to reinforce the grapho-motor and to facilitate retention of the forms of the letters. The children are also practised in analysing the spoken word into its sounds, and in reconstructing the word with sandpaper letters. The way is thus prepared for reading.

The control of the pen is also attacked indirectly. Recourse is had for this training to the geometric insets of which frequent mention has already been made. Taking one of the metal frames into which the inset fits, the child draws with a coloured crayon around the contour of the empty frame. On the figure which results he places the metal inset, and with a crayon of a different colour traces the outline of the inset. Thus are reproduced in different colours upon the paper the two figures. With a coloured crayon of his own selection held as the pen is held in writing, the pupil fills in the figure which he has outlined. In making the upward and downward strikes he is taught not to pass outside the contour. Variety is lent to the task by the choice of differently coloured crayons, and by the use of different insets, the latter also training him to make upward and downward strokes of various lengths. Gradually the lines tend less and less to go outside the enclosing boundary, until at last they are perfectly contained within it, and both the centre and the frame are filled in with close and uniform strokes. The child is now master of the pencil; the muscular mechanism necessary to the manipulation of the instrument of writing is established.

The moment arrives when the partial processes are perfected, when the three prerequisites to writing are at the pupil's command, that is, when he can fill in the geometric figures with free and regular up and down strokes, when he can reproduce the forms of the letters, moving his finger in the air, and when the composition of words out of spoken sounds has become a psychic impulse. At this point the imitative tendency in the child arouses in him the impulse to write, and a pupil who has given no previous indication of having developed ability in this direction begins straightway to write. The spontaneous emergency of this writing activity is recorded by the directress much after the fashion that the appearance of the first snowdrop or primrose would be recorded by a naturalist. The children, not being able to adjust in their minds the connection between the preparation and the act, are possessed by the illusion that having now grown to the proper size, they know how to write (p. 288).

Dr. Montessori reports (p. 294) that the average time that elapses between the first trial of the preparatory exercises and the first written word is, for children of four years, from a month to a month and a half. With children of five years the period is much shorter, being about a month. The pupils are generally experts after three months time, and those who have written for six months may be compared to the child in the third elementary.

Reading. The way to the teaching of reading is prepared in the Montessori system by the means adopted in the teaching of writing. In the exercises preparatory to reading is included world-building with sandpaper script characters representing the sounds of the spoken word. Reading demands the inverse process, that is, the reproduction of the sounds from the symbols, then the fusion of these sounds into the words. There is also necessary for the correct enunciation of the word the proper accentuation of the syllables, and this comes only with recognition of the meaning. Dr. Montessori consequently refuses to give the name reading to anything less than this. Just as in her system writing is something more than mere copying books and headlines, so reading is not a mere babbling of sounds or words, but the recognition of the meanings represented by the visual characters. " What I understand by reading," she says (p. 296), " is the interpretation of an idea from the written signs "; and again, " Until the child reads a transmission of ideas from the written words he does not read."

The didactic material for the lessons in reading consists of slips of paper or cards upon which are written in clear, large script words and phrases.

The lessons begin with the reading of names of objects which are known or which are present. There is no question of beginning with words that are easy or difficult, for the child already knows how to read the sounds which compose any word. The procedure is as follows: The child is given a card on which a name is written in script; he translates the writing slowly into sounds, and if the interpretation is exact, the teacher limits herself to saying "Faster." The child reads more quickly the second time, but still often without understanding. The teacher repeats, "Faster, faster." The pupil reads faster each time, repeating the same accumulation of sounds, and finally the word bursts upon his consciousness. When the child has read the word, he places the explanatory card under the object whose name it bears, and the exercise is finished. It is a lesson which goes very rapidly, since it is only presented to a child who is already prepared through writing.

Sentences describing actions or containing commands are likewise written on slips of paper, and the pupils select these and carry out the requests contained in them. It is to be noted that the child does not read the sentences aloud (p. 301). The purpose of the reading is to teach the child to discover ideas in written symbols, consequently the reading should be mental and not vocal. "Reading aloud," according to Dr. Montessori's analysis, "implies the exercise of two mechanical forms of language, articulate and graphic, and is therefore a complex task. The child, therefore, who begins to read by interpreting thought should read mentally." "Truly," says Dr. Montessori (p. 298), "we have buried the tedious and stupid ABC primer side by side with the useless copybooks!"

As to the average time required for learning to read, it appears that the period intervening between the commencement of the writing process and the ability to read is about a fortnight. Facility in reading is, however, arrived at much more slowly than perfection in writing. Almost all the normal children trained according to the Montessori method begin to write at four years of age, and at five know how to read and write, at least as well as children who have finished the first elementary.

The Italians start these processes with an undoubted advantage, as their language is practically phonetic. The irregular system of notation of the English language must handicap teachers who attempt to apply the method in this country (Holmes, p. 16; cf. Tozier, p. 47), but "individual English children who have been taught by the Montessori system have learned to read and write as rapidly and at as early an age as the Italian children in the Montessori schools" (p. 13). Miss Tozier tells of a little boy, aged only three and a half, who, without realising that he has as yet done anything more than play, can read and write both in English and in Italian.

Number. Dr. Montessori's treatment of the teaching of number does not display the same degree of originality as her methods of teaching writing and reading. To one acquainted with the present position of the psychology of number this is not surprising, for psychologists are still undecided as to whether the conception of number in the child's mind originates in counting or whether the idea can arise from the simultaneous presentation of a multiplicity of objects.

The device of which greatest use is made in the teaching of number on the Montessori method is the "long stair," a set of ten rods, the first being one meter in length, the last one decimeter, the intermediate rods diminishing in length by decimeters. The rods are divided into decimeter parts, the spaces on the rods being painted alternately red and blue. When arranged in order they form what is called the long stair. They are utilised in the sensory exercises, for training the pupils in discrimination of length. In

these exercises the rods are mixed up and the teacher grades them in order of length, calling the child's attention to the fact that the stair thus constructed is uniform in colour at one end. Then the child is permitted to build it for himself.

After the pupil has had practice in arranging the rods in order of length (pp. 327-8), he is required to count the red and the blue divisions, beginning with the shortest rod; thus, one; one, two; one, two, three; always going back to one in the counting of each rod, and starting from the same end. He is then got to name the single rods from the shortest to the longest, according to the total number of divisions each contains, at the same time touching the rods on the side on which the stair ascends. The rods may then be called piece number one, piece number two, etc., and finally they may be spoken of in the lessons as one, two, three.

The graphic signs for the numbers are cut in sandpaper, and by the three-period lesson arrangement previously mentioned, the pupil is taught to associate the names of the numbers with their graphic forms.

The third stage is the association of the graphic sign with the quantity. Addition may then be attacked, and is taught by requiring the pupils to put the shorter rods together in such a way as to form tens. One is added to nine, two to eight, and so on. Subtraction, multiplication, division can likewise be introduced by means of the same didactic material, and later on the child is allowed to express graphically his operations with the rods.

A careful student of Dr. Montessori's methods of, and apparatus for, sensory training could, we believe, readily devise other exercises in number which would, as faithfully as the long-stair exercises, fulfil the requirement that the control of the processes should come not from the teacher but from the material. We should indeed not be surprised at further developments of the method in this direction.

Criticism of the Method. As the Montessori system is still in process of evolution it would be unwise to pass hasty criticisms on its incompleteness in certain respects. A recent publication on the subject (Holmes) informs us that clay modelling and dancing have been introduced, and it will doubtless be more profitable to wait until such subjects can be evolved in accordance with the spirit of the method than to engraft on to it prematurely current practices in these subjects which are not in harmony with the determining principle of the method.

The one line which criticism of the system is at present taking is that the system neglects the cultural aspect of education, the teaching of literature or the development of the imagination. In defence of Dr. Montessori, or in explanation, it may be said that she accepts the recapitulation principle in education (p. 160). "The child follows the natural way of development of the human race. In short such education makes the evolution of the individual harmonise with that of humanity." Just as, in the early development of mankind, the practical activities must have figured more largely than the literary, so in accordance with this principle the early education of the child should be more practical than humanistic. Dr. Montessori is also in agreement with the highest authorities in child psychology in regard to her attitude to the imagination. The child's imagination, according to these authorities, for example, Meumann (*Vorlesungen,* 2nd edition, p. 534), does not need developing but disciplining: the child is, in their estimation, too prone to use imagination as a substitute for thinking, teaching reinforces this tendency, whereas what is necessary is to train the child to subordinate the imaginative to the intellectual, æsthetic, and other powers, to make it serve some useful end, practical or theoretical, not to give it free scope for its own sake; for only such regulated imagination is of value in life. Lastly, the origin of the method accounts, to some extent, we believe, for its limited scope. The conditions under which he worked led Pestalozzi to say, "The poor ought to be educated for poverty." Doubtless the class of pupils for whom

the House of Childhood was instituted was such that literature would not immediately appeal to them, but with an extension of the scope of the Montessori system there may go in the future an extension of the curriculum. That the curriculum is far from finality is evident from the fact that Dr. Montessori has marked out religious instruction as a subject awaiting investigation and reform according to the principles of a scientific pedagogy.

PARENT EDUCATORS.

By Professor Bidart. Translated by Miss M. S. Ryan, B.A.

I. The First Good Habits.—"The child's first teacher is the nurse."

Importance of the first good habits: they are a second nature. What are these good habits? The essential are: good physical habits, and, not to scream, to be good-tempered, quiet and affectionate.

The means of making the child acquire them are to begin early, to demand the same actions regularly, and to make them pleasureable.

I. *Importance of the first good habits.* "Leave him alone! What can you expect of a child only a year old?" "You can prevent his forming a bad habit."

This is the never-ending quarrel between father and mother. It is unfortunately the case in many families that the mother gives way and the father feels vaguely that all is not well, that some control should be exercised, whence arise frequent bickerings and sometimes keen vexations.

Is it worth the trouble? Would it not be better for father as well as mother to let things take their course? If education is to gain nothing by it, it would be very stupid to give oneself any further trouble.

Here are two children twenty months old. "He is most tiresome," says the one mother. "Nothing pleases him; we do not know what to do with him." "Baby is always good and quiet," says the other mother. How comes it that there is this fundamental difference? Is it perhaps Nature? Certainly we all come into the world variously gifted. Why can I not give my son a nature after my own heart? I should be the greatest of men. What a triumph it would be were I able to fashion a human being after my own desires! And is there no means to do this? Let us consult the mother of the second baby. Here is her answer. "He would have had his whims and fancies, if I had indulged him. He used to try to get at everything. I trained him only to take his own things. He began to scream to get his own way; I would not let him go on. He did not want to obey me. I made him form the habit of obedience. Little by little, he changed. Believe me, habit becomes a second nature."

Thus, even though it is not in my power to create a nature according to my own inclinations, at least I can make my child adopt the habits which I consider good. And is not that, in fine, equivalent to being able to give my child the nature I would have wished for him? There is the key to the mystery; I guard the secret of my power.

I will use this power to give the young child good habits from his birth, he will acquire good ones as easily as bad, just as the young plant which can be trained to bend as easily in one direction as in another.

SUGGESTIONS FOR STUDY AND PRACTICE.

Music and the Feeble-minded.—"The well-known fact that feeble-minded children are pleasantly aroused and stimulated by music, and the fact that they are prone to imitate even habits or actions which they do not at all understand, can be directly applied in the way of practical physical training. A noisy, unruly group of children can be got to march in line and more or less in step for a long time to the music of a piano or the beat of a drum, showing real interest and pleasure. Children will do this who have previously shown little idea of precision either of

mind or body. This orderly marching can be gradually made more complicated, single file, double file, slower, faster, then walking on tiptoe, jumping over hurdles, etc., all to strongly accented music and all in imitation of the teacher or skilful leader. These movements call for the natural use of the various parts of the body, the doing of common things, etc.

"In the school exercises and other assemblies, children who cannot speak six words distinctly, will sing or hum song after song in fairly perfect time and tune, approximating the correct pronunciation of the words as they are able. They undoubtedly acquire the use of many new words in this way. We have taken advantage of this by arranging a series of musical articulation exercises, taking many of these same familiar melodies and substituting for the usual words of the songs, the different vocal sounds of our language."—*Walter E. Fernald, M.D.*, Superintendent of the Massachusetts School for the Feeble-minded.

Handwork and Child-Study.—"Some of the researches in child-study have direct bearing on manual work, and all of it is necessarily valuable to the manual teacher in that it reveals the nature and capacities of the child at different stages. . . . The pre-eminent function of the teacher is to study the child, for though children have far more points of resemblance than difference, and the resemblances are of the greater importance, in the long run, yet the differences are of very high value in themselves, and of the greatest consequence to the individual." —*H. Holman, M.A.*, in *Hand and Eye Training or Education through Work.*

THE CHILD-STUDY SOCIETY AND THE CONSTITUENT SOCIETIES.

The Exeter Society.—The first meeting of the year was held in January at the University College, where members and friends came to elect their officers, to hear and adopt the reports of their Treasurer and Secretary, and finally, to discuss the Montessori Method, about which they had heard from Miss A. M. Shorts, B.A., in December. After some informal talk over coffee and cake, the members adjourned to the lecture room and proceeded to their more serious business. The reports showed a decreased number of members, but an increased interest and activity in spite of the fact that no circles had been held; so that on the whole it was felt that the year's work had been satisfactory. Then the officers were unanimously re-elected.

In order to make the discusion on the Montessori Method valuable questions had been sent round to the members, and these questions the Chairman then took in order as follows:—i. Is so much formal sense training wise? ii. Is there not an unwise lack of appeal to the imaginative and receptive powers of the children? iii. Is "free discipline" advisable, and is it practicable in school? iv. Are the methods of teaching reading and writing good? i. The general feeling was that sense training purely, if such a thing could be possible, would not be of value; but that systematic training in receiving sense impressions and in interpreting them would help to inculcate habits of accuracy of observation and expression, and so of thought; provided always that the subject grew with the child's growth and never became a mere mechanical exercise. ii. It was felt that the Montessori System was very largely a matter of sense training and therefore had a tendency to be one-sided. The child has a power of imagination, both receptive and constructive, which, equally with his desire to use his senses and his muscular activity, needs stimulus and training; and this power, besides leading him to the acquisition of many ideas, is at the root of all his original skill. iii. Some speakers understood the term "free discipline" to mean allowing children to do "precisely what they liked, when they liked and how they liked," and forgot that there is no discipline at all in such a procedure. It was resolved to hold another meeting a fortnight later, in order to continue the discussion about discipline, and to go on with the question of the method of teaching reading and writing, which had been left untouched.—*Miss A. J. Walker.*

The Halifax Society.—On Wednesday, February 5th, Professor J. A. Green, M.A., University of Sheffield, gave a lecture on "Montessori v. Dewey."

Professor Green said it was impossible to go into details as to the principles at the back of their respective ideas. Suffice it to say that Mme. Montessori, who had spent a considerable amount of time in a medical atmosphere, looked at child-life from the point of view of the senses, whereas Dr. Dewey looked upon the child from a psychological standpoint, i.e., the soul within waiting for development. He said they both started from the same social standpoint, but their methods differed fundamentally. Mme. Montessori had had a great deal to do with the training of defective children, and was naturally influenced by her work amongst them and to a certain degree looked upon the normal child as a kind of psychological struc-

ture. Dr. Dewey, on the other hand, looked upon the child as a living soul. He (the speaker) did not agree with Mme. Montessori in her idea of making a mind out of the senses, but he did agree with Dr. Dewey. Mme. Montessori says "Train the senses." Dr. Dewey says "Enrich experience," which meant that up to the level of its needs the sense capacity of a child was adequate. Professor Green believed in helping the children to further experience. He said it did not matter about the senses, as long as the lad was taught things that meant something. Mme. Montessori worked out her problem in the way a doctor might. He had great respect for doctors, but doctors and pedagogues did not go together. He agreed with Dr. Dewey that when a child is doing things he does not understand he is not being educated.

Professor Green, in concluding, said he had tried to put the matter as clearly as possible in the short time at his disposal. He said he hoped he had not criticised Mme. Montessori too severely, as there was much that was good in her book, but she was not the psychologist that Dewey was, and was rather apt to forget the spiritual side of nature.

The Tunbridge Wells Society.—On December 3rd "The Age at which the Different Faculties Develop" was discussed. Miss Barker, Principal of the Nurses' Training Home, considered the hereditary tendencies did not show themselves till the age of three. Dr. Burnett related experiments in hospital with twenty babies, each one of whom at birth tightly clutched his stick and their prehensile grip was such that they could be hung up with it. He strongly favoured teaching the use of both hands. There is a brain connection between the use of the hand and the speech centre. Injuries to the brain, impairing the power of speech might not produce that effect with ambidexterity.

Mr. E. T. James said that faculties are first practical and later systematic, and are tools wherewith to select from the stream of consciousness. The baby by experiment learns to distinguish things and situations. Imitation, at first purely reflex, becomes a matter of volition. Receptive play changes gradually into productive play. The will at first does not exist as a force of control. Hence a sense of authority, without which the moral idea is impossible, is lacking, and memory is practical and irreflective. The parent is engaged with the cultivation of the practical faculties and the teacher's task is to encourage the earliest attempts at systematisation. We cannot by teaching add a single cell to the human brain, but neither would there have been a Milton had he lived on a desert island. It is for the teacher to decide which cells to develop and which to leave atrophied. The authority of the parent during the seven or eight years of the growth of practical faculties, must be as dogmatic as that of the teacher who presides over reason and system. If statements are not made *ex cathedrâ* they are worthless to a child, which likes not uncertainty. The child rebels fast enough against dogma when the reason is strong enough to stand alone. Meanwhile his soul rejoices in dogma and his systematising faculties flourish only under authority. In the growth of faculties, beware of precocity which is the delight of the parent and the despair of the teacher. Precocious memorising often hinders its reflective use, and the supreme test of ability is the power of co-ordination. The task of the teacher is to systematise the practical faculties, to teach the mental vision to focus its range of perception as physical vision selects and rejects its field. From the age of one and a half to eight years the child is occupied solely in experimenting with phenomena in an isolated way and in the absence of systematisation he remains a savage. The sense of authority, with its corollary, the moral idea begins very early between the ages of four and seven. The memory, first practical, should be made reflective, before the age of twelve; and reason which is the conscious co-ordination of phenomena should be encouraged at the same period.—*Mrs. Janet Pontifex.*

NOTICES AND NEWS.

The Congress of the Royal Sanitary Institute is to be held at Exeter, July 7th to 12th, this year, and there are to be sectional meetings—with Dr. Domville (President of the Exeter Child-Study Society) as president—on the "Hygiene of Infancy and Child-Study."

The Guild of Advance "is the latest outcome of the New School Movement. It is based on the new psychology, and its appeal is made to the more serious amongst those engaged in rearing or educating children," says its promoters. The Hon. Sec. is Miss F. V. Creaton, Penrith New School, E. Finchley, London, N.

The Montessori Controversy has its bad side. A very competent critic writes:—"I have been surprised and disappointed at some of the recent hysterical outbursts. One might be led to conclude from an address by —— that the defects in the Insurance Act were the result of the Montessori Method! Some of the letters to the educational journals on the subject could not have been written if the various questions on the Method, readily accessible, had been read. I used to think that religious heresies received the most intolerant reception; the palm must now, I fear be given to education, and if the attitude represented by the address above referred to becomes habitual, one must despair of education ever becoming scientific."

REVIEWS.

We regret that owing to the pressure on our space Reviews have had to be held over till next month.

Child-Study.

The Journal of the Child-Study Society.

Vol. VI.—No. 3. APRIL, 1913.

Editorial Notes.

Knowing and Doing.—We make no apology for returning to the subject of practical work in Child-Study Societies. Of all people we should most clearly recognise that true knowing begins in doing and returns to doing. Listening and talking may easily defeat real child-study instead of developing it. Lectures and demonstrations are good, but practical study and investigations are vital: this do or ye shall perish as progressive educationists. Our child-study work is not getting into our schools as it ought because it is not coming out of them as it ought.

There are simple but scientific investigations which every intelligent teacher can carry out, to the advantage of himself and his pupils. Mr. Winch gave us an admirable example of such, with most helpful guidance and suggestions in a recent issue of CHILD-STUDY. In this number is another example in Mr. Frank Smith's article on *Suggestion.* Mr. Smith belongs to that, at present, rare order of educator-psychologists, of which we spoke in our February notes. We look to him for much valuable work on these lines.

Educational Re-action?—Professor H. Bompas Smith, who has been appointed Professor of Education at the Manchester University, took as the subject for his inaugural address on January 13th, 1913, *Education as the Training of Personality.* While incidentally acknowledging the interdependence of theory and practice, he laid the strongest possible emphasis on the idea that the "stock of experience is a heritage handed down from one generation of teachers to another, and unless a master enters into this heritage he will never be efficient in his work." He insists that Professor Thorndike's psychological theory, as given in his *Principles of Teaching,* is "totally opposed to those which we have found to be consistent with our experience," and says: "I believe that a knowledge of it ["such a science as here described"] would be positively harmful to the teacher." Is this a new light or old darkness?

Next we have Miss Geraldine E. Hodgson, D.Litt., Lecturer on Education in the University of Bristol, who, in a criticism on the Montessori Method, which appears to us both violent and unfair, writing thus: "Perhaps it was Pestalozzi who conceived the notion of making a plan in a vacuum; in other words, of inventing a theory to fit *any* class, which, of course, ended in its fitting none." Has Dr. Hodgson never read about Pestalozzi, or did neither he nor his biographers ever speak the truth? Again she writes: "This is perhaps the gravest of all its defects—the whole trend of the Montessori system is towards the position that the great business of life is *getting,* getting for one's self, whether it be power, or joy, or wealth, or what-not: *self*-development." This, we submit, is unfair to Dr. Montessori, and confuses self-development with the development of selfishness. One form of the developing the self is to make it altruistic.

Educational Progress?—All who concern themselves with school affairs are talking of educational reform since the speeches of Lord Haldane and Mr. Pease on the Government's education policy.

But modifications of school organisation by no means necessarily involves educational reform—it may be an obstacle to its progress, or a direct injury to its present position. Child-Study Societies might do some real good by formulating their views on the real educational defects in our schools, and forwarding a statement of these to Members of Parliament and members of the Ministry.

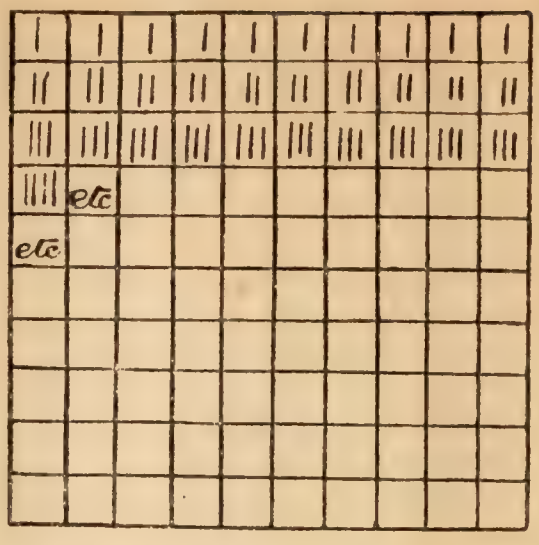
The Psychology of Mathematics.

II.

By William Brown, M.A., D.Sc.

B. *The psychology of number* [cf. E. Meumann: Experimentelle Pädagogik, Vol. II., Lecture 16, "Das Rechnen."] The earliest authority on the psychology of number, and still the most important, is Pestalozzi. He was the founder of the intuitive method in arithmetic and foreshadowed our present-day method of number—pictures (*Zahlbildermethode*). According to him, "number" is one of the three elements in intuition (*Anschauung*), the other two being "word" and "form." Its psychological significance is to make us acquainted with the numerical relations of intuited objects, and therefore training in the use of number must from the very beginning be intuitional. "Number," says Pestalozzi, "is the relation of more and less in all intuitions. It is an abstract *relational* concept, and the task of education is to change the intuition of number-relations from vagueness or indefiniteness to definiteness. The intuition is present in the mind at quite an early age, before the child goes to school. Instruction develops it, but cannot produce it.

Pestalozzi's method is well known and needs no detailed description. He employed a *table of strokes* consisting of 10 × 10 squares. In each of the ten squares of the first row was placed *one* upright stroke, in those of the second *two*, and so on (see figure). The teacher used the table as follows: (1) he pointed to the strokes in the square; (2) he pronounced the corresponding number-name;



(3) he asked the child to count the strokes.

There are four general criticisms that may be brought against Pestalozzi's method:

(1) The groups towards the end of the table are too large. Subordinate grouping should have been employed.

(2) The elements are not movable.

(3) The method conflicts with the known psychological fact of the narrowness of the field of consciousness. Only three to four visual impressions can be simultaneously apprehended by the child.

(4) The method hinders the development of abstract calculation. These criticisms originate from the supporters of the now well-known rival method, the counting method (*Zählmethode*), which emphasises the *temporal* element in number as the other does the *spatial*. It is important to realise that both elements, the spatial and temporal, are present in number, and therefore that both methods are justified, or rather, some combination of the two methods is needed in any form of instruction which is to be entirely satisfactory. If any preference is to be given to one method over the other, it should go to the number-picture method. The counting-method is merely a supplementation of this method. Not only do the grouping of the elements and the making them movable get over the objections based on the narrowness of the field of consciousness, etc., but experience also clearly shows that the spatial element in number is more import-

ant, or at least more fundamental than the temporal element. "It is a fact of experience that children become surer in their groundwork if their visual presentations of number are sharply and clearly developed" (Meumann).

The movement towards abstraction, which is certainly favoured by the counting method as compared with its rival, should not be unduly hurried. It is natural for the six-year-old child to work as much as possible with concrete ideas. The training in abstraction may be given later by supplementing the intuitional method with the counting method.

Experiments have been carried out with the object of determining the most suitable mode of grouping the strokes or circles in the intuitional method, and Walsemann [H. Walsemann: "Pestalozzi's Rechenmethode," Hamburg, 1901; "Anschauungslehre der Rechenkunst auf experimenteller Grundlage," Schleswig, 1907] has found that the following arrangement gives the best results in teaching:

0	0	00	00	00 0	00 0	00 00	00 00	0000 0	00 00 0
	0	0	00	00	00 0	00 0	00 00	00 00	00 00 0

Many different modes of grouping were tested, some of which have been in actual use in teaching. The same investigator found that circles arranged in two rows were sixteen times more effective than the single rows of strokes which Pestalozzi used.

Ideas of number arise relatively late in the course of the child's development. Children first enteirng school, *i.e.*, about six years old, are rarely able to count above six, with any appreciation of the meaning of the number. Number develops later than speech, manual dexterities, and space perception, and this in spite of the strongest inducements early in life to its acquisition. The reason seems to be that the power of appreciating time relations and the power of abstracting or of working with abstractions, are both involved in the intelligent use of number, and both of these capacities are very late in reaching full development. Meumann [E. Meumann: Op. cit. pp. 342, 343] writes with regard to this: "It should be noted that when the child, in the earliest years of its life, sees a number of similar spatial objects, *e.g.*, a number of balls, beads, etc., it can with difficulty, if at all, apprehend them really simultaneously, owing to deficient concentration of the attention and weak development of its capacity for a synthetic apprehension of objects. It apprehends a number of objects in space *successively*, by a corresponding number of single acts of perception, and their presence as a number (or plurality) is for the mind of the child at first a repetition of similar impressions in time....We must believe that in this way is developed the idea of an *indefinite* plurality of things or occurrences. Out of this arises gradually the idea of a *definite* plurality of things or occurrences."

There is plenty of evidence for the existence of such an idea of an indefinite plurality. Preyer's baby, at the age of eleven months, would notice when one of its ten bricks was missing. Of course it was quite incapable of counting the nine bricks, and probably detected the loss by noting the diminution of the group. At eighteen months the same baby knew when one of his ten wooden animals was missing. Nevertheless, even as late as the twenty-seventh month this child could not fully understand the numbers from one to five. Meumann compares this case with that of Romanes' educated chimpanzee, who always gave one, two, three, four, and five straws correctly when asked, and when six, seven, eight, or nine were asked for, put together at least always more than five and less than ten straws. This monkey evidently had definite ideas of the numbers from one to five and

indefinite ideas of the numbers from six to ten.

Preyer's baby first attempted to count his bricks at the age of two years and five and a half months, doing so in the form "one, another, another." Strïmpell, on the other hand, maintains that he has observed a counting of objects *with naming of the numbers* as early as the nineteenth month, but there is some uncertainty about the exact meaning of his report. However this may be, we can at least state with confidence that an intelligent appreciation of number as far as ten is not attained earlier than at the end of the fourth year in the very great majority if not in all cases.

A considerable number of experimental investigations have been carried out upon adults in recent years with the object of determining to what extent, if at all, a plurality of impressions may be accurately apprehended without counting. Visual and auditory stimuli have been used. In the former case, varying numbers of dots, circles, or other shapes, arranged in varying ways, have been exposed to the subject's view for very short intervals of time by means of a special apparatus known as a tachistoscope. The time of exposure is so brief that counting cannot take place, and the subject is asked to state what number of impressions he has observed. The most satisfactory of these experiments are those carried out by Helene Nanu [Helene A. Nanu: "Zur Psychologie der Zahlauffassung," Wurzburger Dissertation, 1904]. Bright circles on a dark background were exposed for 33/1000ths sec., and the circles were arranged in different ways in different series of experiments, in an oblique line, in a cross, parallelogram, hexagon and circle. The greatest number of points correctly estimated by all the subejcts under these conditions (*i.e.*, without counting) ranged from five, in the case of the line, to ten, in the case of the parallelogram. For the cross and circle it was eight. For the hexagon it was eight only in seventy-five per cent. of the correct cases. Nanu found that the subjects of the experiments fell into two types as regards their method of apprehending the dots, viz., a synthetic and an analytic. "The former compounded the group out of its elements, the latter had first the impression of the whole and then directed its attention to the parts."

Experiments with auditory stimuli were first carried out by Dietze [Dietze: "Ueber den Bewusstseinsumfang," Phil. Studren, BA II., 1885], who used a metronome beating at the rate of about four per second. His method was to get the subject to compare two series of beats, separated by a short interval, with one another and to say which was the longer. The subject was forbidden to count the beats. Nanu repeated these experiments upon four adults and found that in all cases up to eleven sound stimuli were correctly estimated (without counting), and in individual cases as many as forty-nine. In every case there was an involuntary tendency to rhythmicise the impressions, and this was a considerable aid to their apprehension.

Although these experiments definitely prove that estimation of a plurality of elements without counting is possible, it must be noted that the subjects tested had already elaborated their ideas of number (with the aid of counting). The experiments do not prove that the estimation of number can ever be entirely independent of counting. Further light on the matter may be hoped for from experiments with young children. It is very improbable that any idea of number can *originate* without counting.

C. *Statistical Investigations* (*Correlation*). [For full details of these researches, see the following articles of mine: "An Objective Study of Mathematical Intelligence," Biometrika, Vol. VII., 1910; "Some Experimental Results in the Correlation of Mental Abilities," Brit. Journ. of Psychology, Vol. III., 1910 (included in "Mental Measurement," Cambridge University Press, 1911).] In its technical sense, correlation may most adequately be defined as a tendency towards concomitant variation exhibited by two series of

measurements. When the two series tend to vary in simple proportionality, either direct or inverse, the correlation is said to be linear, and is conveniently measured by the "correlation coefficient," r. When the concomitant variation is not one of simple proportion, the correlation is said to be non-linear or skew, and in such a case r is meaningless, and the only adequate measure of the correlation is the "correlation ratio," η. r may range in value between 1 and —1, η between 1 and 0. When $r=1$ (or —1), or $\eta=1$, the correlation is said to be complete. Such cases occur, with close approximation, in physics. Thus the relation between length and temperature of a metal rod is a linear one, and consequently the correlation coefficient, r, between series of measurements of the length and corresponding measurements of the temperature is =1. The relation of the pressure and volume of a given mass of gas, for constant temperature, is non-linear, the curve expressing the relation being not a straight line but a rectangular hyperbola. Here r is meaningless, but the correlation is satisfactorily measured by η, which again =1. The cases, however, where the general theory of correlation is more useful are those where, owing to the number and complication of the factors involved, the correlation is not complete. Measurements exhibiting definite and pronounced variability, such as those of biology and psychology, are those that tax the full resources of the theory. Here, owing to the variability, the proportionality is not complete and r (or η) measures the *tendency* towards concomitance of variation.

To make this clearer by a special instance: suppose one hundred boys are measured for their ability in geometry and also for their ability in algebra, then if the boys above the average in one ability tend as a group to be above the average in the other ability the correlation will be positive, somewhere between 0 and 1, but if they tend as a group to be below the average in the second ability, the correlation will be negative. This tendency is what is measured in correlation. It may be continuously and evenly in one direction throughout the group, as you pass from the worst to the best boys in either of the abilities. In this case the correlation is "linear," and is satisfactorily measured by the correlation coefficient, r. But it may change in direction, either once or any number of times as you pass from the worst to the best in either of the abilities, *i.e.*, if the boys are classed into groups according to their varying excellence in one ability, and then the *average* excellence of each group in the other ability is calculated, these averages will be found not to rise (or fall) continuously throughout the whole of the main group, but after rising may definitely fall (or vice versa), and then perhaps rise again. Or the rise may be continuous throughout the group but not uniform; it may be more rapid in one part of the group than in another. Either of these cases would be a case of "non-linear" or "skew" correlation. The correlation would not be satisfactorily measured by r, and so the correlation ratio, η, would have to be calculated. When the correlation is linear, $\eta=r$, within certain limits, so that a good way of deciding whether this is the case is to calculate both values. In cases of non-linear correlation η is always greater than r. [As an instance of skew correlation, I may mention that between the speed and the accuracy of adding figures. See "Mental Measurement," pp. 125, 145-147.]

For methods of calculating r and η, I must refer my readers to my book on "Mental Measurement," as the subject is too complicated to be treated adequately in this short article. I will just quote the formulæ here and pass on. The *correlation ratio*, η, is the ratio of the standard deviation of the means of the sub-groups above-mentioned to the standard deviation of the entire group, the measurements being in both cases of the *same* ability. The *correlation coefficient* is given by the formula:

$$r = \frac{S(xy)}{N \sigma_1 \sigma_2}$$

where x and y are deviations from the mean values of the two abilities measured, σ_1 and σ_2 are the standard deviations of the two abilities measured, and N is the number of individuals in the group.

If ability is represented by order of merit, as is frequently the case in school subjects, the following two formulæ give r, viz. :

$$\rho = 1 - \frac{6\,S\,(d^2)}{N\,(N^2-1)}, \text{ and } r = 2 \sin\left(\frac{\pi}{6}\rho\right)$$

Here d is the difference between the rank of an individual in the one series and his rank in the other, and S ( ) is the symbol for summation. Correlation between two abilities in a group of individuals may be regarded as evidence of partial identity of the factors involved in the two abilities. This may mean partial identity of the two abilities themselves, but we must constantly bear in mind, when interpreting correlation results, that the identity may be an identity of external factors, an identity of the external conditions under which the abilities are exercised, or under which they have been evolved in the history of the race.

Using the method of correlation, I attempted some two years ago (see Biometrika, 1910) to make a quantitative analysis of mathematical intelligence by determining the closeness of inter-relation of the various forms of such intelligence that are logically distinguishable. For this purpose I examined 83 boys of a public school by papers in geometry, arithmetic and algebra, and in marking the papers kept the marks separate for the following performances :

Geometry.—A. Memory of definitions and general principles (*e.g.*, principle of superposition). B. Memory of constructions. C. Memory of preceding propositions and power of applying them. D. Recognition of necessity of generality in proof, and power of recognizing general relations in a particular case.

Arithmetic.—E. Accuracy. F. General memory of rules and power of applying them. G. Power of doing sums in percentage and proportion.

Algebra.—H. Accuracy. I. General memory of rules and power of applying them.

Far more detailed distinctions were at first made, but they were found to be statistically unsatisfactory, owing to the small size of the group (83) examined. The total marks for geometry, arithmetic and algebra were also noted.

Correlations were calculated between these twelve series of measurements. The coefficients thus obtained were of course crude values and had to be " corrected " for irrelevant conditions, such as age, difference of form or class, etc., the method used for correcting being the method of " partial correlation," which will be briefly explained later on, in another connection. For further details, I must refer my readers to the Biometrika article. From this article I quote the following list of finally corrected correlation coefficients :

Alg. Arith.	$.76 \pm .03$	BD	$.27 \pm .07$	FG	$.41 \pm .06$
Geom. Arith.	$.28 \pm .07$	CD	$.69 \pm .04$	BG	$.11 \pm .08$
Geom. Alg.	$.18 \pm .08$	Arith. G.	$.65 \pm .04$	DG	$.11 \pm .08$
AB	$.42 \pm .06$	Alg. G.	$.45 \pm .06$	CF	$.20 \pm .07$
AC	$.64 \pm .05$	Geom. G.	$.39 \pm .07$	CI	$.05 \pm .08$
AD	$.31 \pm .07$	CG	$.28 \pm .07$	EH	$.33 \pm .07$
BC	$.57 \pm .05$	IG	$.00 \pm .08$	FI	$.04 \pm .08$

Many interesting results may be deduced from these coefficients by using the method of " partial correlation," which I will now explain in connection with the particular case of Geometry, Arithmetic and Algebra. These three abilities are all correlated with one another, and the question at once suggests itself : how far is

the correlation between any two of them, say Geometry and Algebra, due to the correlation of each with the third (Arithmetic), and how far is it independent of such correlation? The answer to the second half of this question is given by the partial correlation cofficient of Geometry and Algebra for a constant value of Arithmetic, and is calculated by means of the formula :

$$r_{12.3} = \frac{r_{12} - r_{13}\, r_{23}}{\sqrt{(1 - r_{13}^2)\ 1 - r_{23}^2)}}$$

where $r_{12.3}$ means the correlation between 1 and 2 for a constant value of 3. To put the matter in a clearer light, and state accurately the reasoning at the base of this formula : suppose that out of our 83 boys there are, say, 25 of approximately equal ability in Arithmetic. Pick out these 25 boys and correlate their performances in Geometry and Algebra. The result will be the partial correlation of Geometry and Algebra for a constant value of Arithmetic and represents the extent to which geometrical and algebraical abilities are connected independently of their respective connecting with arithmetical ability. In our case the formula gives the following three partial correlation coefficients :

Geom. Alg. 0. Geom. Arith. $23 \pm .07$.

Alg. Arith. $.75 \pm .03$.

Taking the *four* variables A, B, C, D, and applying a similar method, though a more complicated formula, I found that the partial correlation of C and D (*i.e.*, for constant values of A and B) = .93.

From the first result, I conclude that geometrical ability and algebraical ability are only connected through their respective connections with arithmetical ability, from the last that " there is a very close relation indeed between memory of propositions in geometry and the power of recognising general relations in a particular case in geometry."

Again, since CG and DG are both greater than IG, there is some justification for concluding, at least tentatively, that " the ability to do percentage and proportion sums in arithmetic is more closely related to essential geometrical ability than to essential algebraical ability," and therefore that the geometrical method of teaching proportion is more " natural " and more likely to be effective than the algebraical or analytical method.

The slight connection between geometrical ability and algebraical ability would justify the view some mathematicians (*e.g.*, Henri Poincaré) hold that mathematical reasoners fall into two distinct types, the geometrical or intuitional and the analytical or logical types.

My main object in again describing this research in the above more popular form than that in which it originally appeared is that perchance some of my readers may feel tempted to repeat it, in an improved form and upon many more groups of cases, and so obtain a real insight into the inter-connections of the various forms of mathematical ability. My own results are but fleeting and uncertain glimpses of such interconnections.

One fact at least in the psychology of mathematics seems certain. Mere introspection will never give us the key to its secret. This can only be obtained by supplementing introspection by objective methods, and at the present time the objective method most appropriate would seem to be the statistical method of correlation.

The Beginnings of Syntactical Speech. II.

A Study in Child Linguistics.

By William Boyd, M.A., B.Sc. Ph.D.

VI. *Inversion.* So far we have spoken as though the sentences of the two-year-old child were like those of adults but for their extreme simplicity and for the omission of one or more elements; and so as a matter of fact they are for the most part. But occasionally there are departures from the common order under the impulsion of a psychological rather than a logical necessity, and the fact which is first in mind appears first in the sentence even when that is contrary to the order of ordinary speech. Thus, " Rubber,

where's?" is evidently the result of the mind's pre-occupation with the article wanted. "Too heavy, chair" (*i.e.*, the chair is too heavy), indicates that the heaviness was the outstanding fact and not the chair. In a number of cases, the object, because of its momentary importance, stands at the beginning of the sentence: *e.g.*, "Ribbon, roll it up," "Muff, Isa keep." In all there were 36 inversions.

VII. *Inflections.* It is necessary, in concluding this account of sentence structure, to give some account of the inflections of nouns and verbs employed by the child of two. Generally speaking, inflected forms are rare. There are occasional plural and possessive endings, but as a rule the uninflected singular form serves also to denote both plural and possessive. There is clear evidence, however, that the process of acquiring the special forms is in process. In one case, for example, when handling some curtain cords, the child remarked, "Bonny, pretty wee thing": then immediately she corrected herself and said, "Bonny pretty wee things." The effort to acquire and use the possessive ending is evident in such a phrase as, "You's dress." ("You" at this stage was herself). In the same way, the simple verb-form (that is, the infinitive) is in common use for the present indicative both singular and plural, as well as for past and future, and for some modal variations. The one inflected form which is used surely and constantly is the present participle. The weak form of the past tense is rare: in several strong verbs, however (such as "find"), the proper difference is made between present and past tense, probably because they represent for the child at this stage distinct words. Such forms as the comparatives of adjectives occur now and again, but there is no sign of any comprehension of the implied comparison such as is to be found quite definitely at the end of the third year.

B. *The Materials of Speech.*—The total number of words in the 1,236 sentences collected, as already pointed out, was 4,137: the entire vocabulary represented by these was 658 words. At three, the total number of words used was 7,804, and the vocabulary was 965.

The distribution of parts of speech, expressed in percentages, was as follows:

Parts of Speech.	Total Words.		Vocabulary.	
	Two	Three	Two	Three
Nouns	36.7	16.3	49.4	43.7
Pronouns	6.3	16 0	2.9	2.9
Verbs	27.6	22.6	20.8	20 9
Adjectives	12.3	11.1	13.5	16.2
Articles	1.4	6.4	—	—
Adverbs	13.2	9.5	7.0	9.8
Auxiliaries and to (infin.)	.7	9.5	.1	1 8
Prepositions	1.2	5.5	.2	2 8
Conjunctions	.2	3.4	1	2.1
Interjections	.3	.2	.2	.5

Let us come now to a detailed consideration of what these figures mean with respect to the mental content and attitudes of the child.

I. *Nouns.* A comparison of the whole number of nouns used at two and three reveals a quite unexpected difference between the two ages. At two, there are 1,518 nouns in a total of 4,137; at three, only 1,276 in 7,804.

A partial explanation is to be found in the compensatory disparity of pronouns, which at two number 261, and at three 1,237. It is evident that the inability of the child to make proper use of the pronouns calls for a much greater use of nouns on his part. In the absence of "I" and "me," which appear only five times (as against 526 appearances at three), the personal name of the speaker is used 231 times; and presumably "he," "she," "him," "her," "we," "they," which do not appear at all at two, and "you," which occurs in a special sense ten times, have all their own equivalents among the nouns which go to swell the total.

Even, however, when nouns and pronouns are taken together, the percentage of the sum at two is 44, and at three only 32.3: from which it is clear that the noun

or its equivalent plays a much larger part in speech at two than at three. This is confirmed by the fact that in the respective vocabularies there is a similar, though less marked difference in the number of nouns.

It is worthy of note in this connection that while proper nouns form much the same proportion of the vocabulary (10.5 and 11.1 respectively), these nouns bulk much more largely in the actual speech of the two-year-old child. 24.5 per cent. of the total number of nouns at two is proper, compared with 8.5 at three.

On deducting the proper nouns, the number of common nouns in the two cases is almost the same (1,146 and 1,167), but as might be expected the facts denoted by them differ considerably. If we take those groups of nouns which form at least five per cent. of the whole of the nouns at two or three, we get a simple measure of the difference.

	TWO.	THREE.
People	23.7	22.4
Household	16.0	8.4
Food	13.3	6.1
Dress	6.9	6.2
Animals	6.1	7.5
Body	6.1	9.1
Play	3.8	7.6
Social facts, institutions, etc.	3.2	5.3
Topography	2.2	5.6

From these figures it will be seen that the interest in people and in dress stands much at the same level in both years, that the household facts and food seem to be of less account, and that in all the other groups (especially those concerned with the body and with play) there is a well marked increase. It should be added that in the smaller groups of words not included in the table there is an increase in the use of words relating to quantities and to times.

II. *Pronouns.* Attention has already been called to the difficulty which the child finds with the pronouns. Excluding "it," which is not, properly speaking, a personal pronoun, the personal pronouns number 29 : "self," which generally refers to the speaker, occurs 11 times, and "you," which by a confusion easy to understand means "I," occurs 10 times. The proper use of "I" is just beginning in a tentative way. Here are one or two interesting sentences from the record of the 20th month : "Isa wash Isa," corrected immediately to, "Self wash Isa." "Isa not see train," repeated subsequently as, "Isa I not see train."

The most common pronoun is "it," used comprehensively for things, one or many : it is used 128 times. A curious use of it, which is fairly frequent, is in anticipation of the noun : *e.g.*, "Isa chew it up —fish."

There are no relative pronouns, only one interrogative ("what," used five times), and a few indefinite pronouns like "some" and "both." It is worthy of note, however, that the demonstrative pronouns, especially "that," occur frequently, there being altogether 83 of them. If "here" and "there" used demonstratively, as in the sentence, "Here (is) Isa('s) fish," are added, the total of demonstrative words is 105, 2.5 per cent. of the total words as compared with 1.5 per cent. a year later. The demonstratives indicate that the process of recognition and naming, which plays a very large part in the beginnings of speech, has become articulate. The child at ten months says, "dog." A year later, he says, "That (is) dog." Subsequently the interest in recognition declines, and "dog" ceases to be a predicate and becomes a subject of which new attributes are predicated.

III. *Verbs.* Seventy-three per cent. of the total number of verbs are transitive. Of these 7.3 refer to actions having persons as their direct or indirect object, and 65.7 to actions with persons or things indifferently as objects. A year later, the percentage of transitive verbs is much the same, but there is an increase in the number of them with personal objects.

Of the 27 per cent. of intransitive verbs, more than two-thirds are verbs of action (*e.g.*, "cry," "come"), verbs indicating a state (including forms of the verb "to be," other than auxiliaries), making

up the remaining third. At the end of the third year the proportions are almost exactly reversed, owing to the great increase in the couplative use of the verb "to be," which, as already pointed out, is often omitted at two.

Only seven auxiliaries are in use, and these occur 19 times. At three there were 16 auxiliaries, occurring 545 times.

IV. *Adjectives.* There is no part of speech which indicates the course of mental progress with greater precision than the attributive adjective. The adjective is the index of the power to discriminate, and every new advance in discrimination is shown by new adjectives. From this point of view, it is worthy of note that at two there are 61 attributive adjectives (9.2 per cent. of vocabulary), as compared with 100 (12.8 per cent. of vocabulary) at three.

A consideration of the main groups of adjectives brings out various points of interest.

	TWO.	THREE.
Sense	13	18
Spatial	7	15
Moral and Æsthetic...	12	27
Human	18	22
Miscellaneous	11	19
	—	—
	61	100

In the adjectives of sensuous reference, there is no obvious difference in the words relating to colour, temperature, and touch, but words relating to taste, which are well established by three, are entirely lacking at two. The spatial words are more numerous at three, but not conspicuously more precise. "Wee," a much over-worked word at both ages, occurs 154 times at two, as compared with 101 at three. "Big," on the other hand, is used 11 times at two and 43 times at three: an increase to be accounted for no doubt by the much keener interest there is in contrasts of all kinds at three than at two. The most notable difference is to be seen in the moral words. At two, there are only eight, all of considerable generality (*e.g.*, bad, kind, naughty). At three, there are 21, and the additions are for the most part more specific words (*e.g.*, "careless," "generous," "polite").

Pronominal adjectives are found only eight times, as compared with 209 at three. "My," which is then the most frequent, does not occur at all, and even "your," which takes its place, only occurs twice. "That," "another," and "some," are the most common of the other adjectival forms.

The definite article appears six times, the indefinite 51 times. This is in striking contrast with a year later, when the one appears 253 times and the other 249.

V. *Adverbs.* Very great changes take place in the course of the third year in the child's use of the adverbs, as a percentage comparison of the total number of different kinds of adverbs at two and at three shows.

	TWO.	THREE.
Place	56.0	36.7
Time	6.8	10.0
Degree	12.2	12.2
Manner	2.4	4.7
Why?	—	6.6
Certainty (perhaps) ...	—	9.4
Negative	22.1	20.5

In both years, adverbs of place have premier position. As compared with time determinations which are uncommon and rather vague, place determinations are frequent and precise. There is, however, a considerable advance in the range of the time adverbs, as is indicated by the fact that there are 24 different adverbs of time at three (almost as many as the adverbs of time, though much less used), compared with eight at two. Adverbs of degree (notably "too," "very," "nearly," "all"), are used almost as readily at two as at three, and so is the negative after the 20th month. The form of the negative in the 20th month is instructive. Here is an example: "Isa('s) egg (is) done: no no all done": *i.e.*, "Isa's egg is not done." The affirmation is first made and then cancelled by the negative. "Why?" and "perhaps," which play a large part in the speech of the three-year-old child, practically do not occur at two.

VI. *Prepositions, Conjunctions, and*

Interjections. As already noted, prepositions and conjunctions are commonly omitted in early speech. At two, 16 prepositions, among which "in" is most conspicuous, are used 50 times. At three, there are 26 prepositions, occurring 426 times.

The conjunctions, implying as they generally do, a relation between sentences rather than between words, present even greater difficulties than the prepositions, to the young child. "And" and "then" are each used once as a true co-ordinating conjunction. "After," "when," and "whenever" (the last, curiously enough, occurring three times), introduce rudimentary subordinate clauses, sometimes by way of completion of a remark made by somebody else.

Interjections are not very common at either age, and become less common as time goes on. At two, the interjections are mainly of the crude "Oh" type. At three, these have in some measure disappeared, and words like "please," which are really attenuated forms of other parts of speech, are the most important representatives of the interjectional group of words.

Suggestion:
And its power on Children in different types of Schools.

By Frank Smith, B.A., B.Sc.

M. Binet, in his book on *Suggestion*, was able to show from his very simple experiments in Paris schools, how easily he could make children accept his word against the evidence of their own eyes and experience, and Mr. Keatinge, in a more recent book, has pointed out the important part that Suggestion plays in school life.

Quite recently I carried out some experiments in three very different types of Cambridge schools in order to see whether children of different environment and training show any well marked distinctions of behaviour in accepting or refusing suggestions which they might disprove by careful observation. For the purpose I selected a grammar school, an elementary school in a good residential district, and a "slum" school in the poorest quarter of the town. For convenience, I will refer to the schools as "first," "second" and "third" respectively. At each school, with the advice of the teachers, I chose a group of six normal scholars about twelve years of age, and also at the two elementary schools I had another group of scholars whose ages averaged about six years. There were no scholars so young as this at the first school. My apparatus was a simple device for showing ordinary lantern slides for brief exposures of about one-fifth of a second, and the subjects were made accustomed to the working of it before any of the slides were fixed. The image of the picture, which was illuminated from behind by an incandescent burner, fell on a ground glass screen near the subject, and was only a very little larger than the ordinary lantern slide.

The pictures themselves were four in number. The first, a train, was used only as a preparation for the remainder, and the suggestions I gave with it were all of actual things to be found on it. Thus, before I gave the first exposure, I said: "I am going to show you a picture of a train, and I want you to tell me whether there is any smoke or not." The exposure was then made (after a signal of warning), and as a rule the subject saw train and smoke quite easily. He was carefully told that in a case of doubt he must ask for the exposure to be repeated, and I took some pains to convince him that I would show a picture as many times as he liked in order that he might be quite sure of his reply. When he had convinced himself that there was smoke or not, I proceeded: "There is a hedge on the left. Tell me what colour it is." As the hedge in question was a vivid green, and very distinct, its colour was generally seen at once. Two further correct suggestions were also given with

this first picture, and the general result was that the subjects gained complete confidence in their power to do what was asked, and also in the conditions of the experiment.

The remaining three pictures were treated in a similar way, except that all the suggestions given were incorrect. Thus one was a picture of a dancing bear in the middle of a street holding a pole in his paws. Before each exposure I gave, in order, one of the following suggestions:—(1) "This is a picture of a *man* crossing a street. Tell me what he has in his hands." (2) "There is some snow on the picture. Tell me exactly where it is." (3) "There is a person on the left pavement. Is it a man or a woman?" (4) "There is a cart up at the top of the street, very small. Is the driver in the cart or walking with the horse?"

The wrong suggestion was given in the first part of each statement, for there was neither man, nor snow, nor person, nor cart. Then, in order to turn away the subject's attention from the actual question whether these things existed or not, I gave him something to describe in the object suggested. I think this helped to keep suspicions back, for failure to discover something was often referred to the second part of my statements. Any attempt to answer the question I asked implied, of course, that the subject had no doubt about the existence of the object suggested. If he told me the "man" carried a brush, or a stick, or even nothing, it was evident that he saw the bear as a man, and did not question my assertion.

The third picture was a donkey standing in a field. In this case I suggested a cow with horns, its hind legs apart, and a milk pail close by. The fourth picture represented a sweep colliding with a well-dressed man who was hurrying round a corner, and I described it to the subjects as a man and woman fighting, with clothes of certain colours, and a crowd of people gathering in the distance. In all, there were twelve wrong suggestions given to each child.

Occasionally, especially in the cases where a scholar grew suspicious, I inserted a correct suggestion between the second and third wrong ones. The object of this was to try and dispel any doubts that might have arisen in the subject's mind. With the younger children it was never necessary to do this. Also, with them, I omitted some of the suggestions (as distances and colours), because they proved to be too difficult.

Results:—In the second and third schools the groups of young scholars, who were only six years of age, accepted all the suggestions I gave, without a single exception. Hence these results do not allow us to differentiate between the two groups. With older scholars interesting differences occurred between the three schools. At the first 75 per cent., at the second 93 per cent., and at the third 97 per cent. of the suggestions were accepted. Thus, at the third school there was an almost complete lack of critical independence, for the few suggestions that were rejected were the most unlikely ones. The following answers will serve to show the almost incredible completeness of suggestibility of a subject at this school. When I asked him to tell me how far apart the "cow's" hind legs were (they were really quite close together), his first answer was: "About a quarter of an inch." I expressed my surprise at this, and asked him: "Is that all? I'll show it again." After the next flash he said, "About two inches," and after a third flash he said the same. When I further asked, "Would you say two, or three inches?" he replied with a compromise: "Well, about two inches and a half."

In order to show how these figures compare with those obtained from adults under the same conditions, I will give the result of the same experiments on six adult teachers at the second school (four females and two males). I omitted the last slide in this case, thus making eight

suggestions to each subject. Of the total forty-eight suggestions, no fewer than twenty-seven, or 56 per cent., were accepted. The highest individual result was an acceptance of 75 per cent.; the lowest 33 per cent. These figures, gained from educated adults, serve to show that the result obtained at the first school implies a very wonderful decrease when compared with those at the other two schools.

The conclusions to which these figures lead us are obvious. The scholars at the grammar school, by refusing the largest number of wrong suggestions, showed themselves better able to assert their independence of judgment than the others. They needed more evidence than the others before they would commit themselves to a definite statement. They frequently asked for an exposure to be repeated, as they realised they had not seen the object suggested. The scholars at the two elementary schools showed very little independence, though the one in the better class district had a slight advantage over the other in this respect. The "slum" children were almost completely suggestible.

These results are in agreement with certain other observations I have made in the same schools.

Parent Educators.

By Professor Bidart. Translated by Miss M. S. Ryan, b.a.

II. *Physical habits.* But are there any habits which may strictly be called good at such an early age? The baby can, as yet, have formed no habits except those which are physical. Here is precisely the solution of the problem: order and regularity in its bodily functions will accustom the child to order and regularity in all else; it is especially at this age that *the mind is reached through the body.* That is why it is so important to accustom the baby to regularity from its birth upwards in its sleep, its meals, and its times for being held out.

Sucking a thumb, or a bit of its bib, or, later on, biting the nails, etc., are all nasty habits, or rather perversions, which we must not permit our children to acquire. Every care should be taken to check any tendency to nervous twitching; in fact, I would say that such children should not be born. As soon as the mother notices the baby begin to indulge in a bad habit, she should prevent him until, at last, tired of being thwarted, he will give up the inclination. This does not apply to the isolated act of putting any new object into the mouth to find out what it is. The young child teaches himself by his sense of taste as well as by touch and sight. But the exhausting habit of sucking must be prevented at any cost. The earliest offender is the nurse when she tries to allay the child's hunger by getting him to suck a finger or some other object.

III.—*The Habit of Not Screaming.* "Is there anything more tiresome than the child who cries on every occasion, the child who will not be quiet? At the age of two his education is already imperilled."

A child cries because he is in pain or because he wants something and will have it. In no case must he be allowed to cry long, or he will become, by force of habit, a persistent screamer, annoying to himself and to other people.

As soon as the baby cries, we must make sure that he is not in pain, hungry or thirsty, pricked by a pin, or needing a change of linen. If he is in pain, then we must try to remove the cause, but let us be careful not to exaggerate our sympathy or he will think himself more unhappy than he is. The baby up to the age of five or six months often cries with no apparent cause; that is to say, for no pain or real desire. We can tell this by his face, which is relatively calm and contented, in spite of his cries. We may watch him open his mouth through an instinctive need of taking a deep breath, expanding his chest, or making some movement. Let him cry in this case, nothing is better for developing the lungs.

When a child is between one and two years of age, he may cry sometimes be-

cause he is restless or tired, or his nerves are over-fatigued. If he is tired, let him rest and go to sleep; if he is fidgetty, the best thing is to amuse him or send him out into the fresh air. Children who make a practice of crying often do so capriciously; to get what they want they begin to cry with the hope that, sooner or later, they will be successful. We must accordingly anticipate their wants and hinder their tears or conquer the habit of crying. [*Etc.*]

The Child Study Society and the Constituent Societies.

Conference.—The Conference of the combined Societies will be held at Liverpool, on May 22nd, 23rd, and 24th, under the Presidency of Sir James Crichton Brown, M.D., D.Sc., LL.D., F.R.S. The subject for discussion will be *Child Study as a Link between the Home and the School.* The programme of the meeting is now being completed by a Sub-Committee of the Liverpool Society. The preliminary arrangements to date are as follows:—

May 22nd.—Reception in the University at 7.45 p.m., when the Presidential Address will be delivered by Sir James Crichton Browne, M.D., D.Sc., LL.D., F.R.S. The Vice-Chancellor will preside.

May 23rd.—9.30 a.m., Council Meeting.

11 a.m.—Paper by Professor Campagnac, followed by a discussion.

1.30 p.m.—Luncheon.

3 p.m.—Reception at Edge Hill Training College (Miss Hale); Tea. Paper on *A Study of the Religious Development of the Child in Early Childhood,* by Mrs. Read Mumford, M.A., Lecturer on Child Training at Princess Christian Training College for Nurses, Manchester.

8 p.m.—Paper by Edgar Browne, M.Ch., F.R.C.S., on *The Development of Vision in the Child,* in the University. Chairman, Professor C. S. Sherrington, M.A., M.D., LL.D, F.R.S.

May 24th.—10 a.m., Paper by W. Leslie Mackenzie, M.A., M.D., D.P.H., *The Child of the One-roomed House,* followed by discuscussion. Chairman, Professor E. T. Campagnac, M.A.

It is hoped members of Constituent Societies will attend the Conference in large numbers; they should notify their intention of being present to the General Secretaries or to the Secretaries of the Liverpool Society, Miss Wrenford, Belvedere School, Liverpool, and Dr. Murray Bligh, 24 Rodney Street, Liverpool.

Arrangements will be made to visit various schools and places of interest in Liverpool.

The Birmingham Society.—The Presidential Address delivered by Dr. Walter Jordan at the January meeting was, as usual, most interesting and especially useful to teachers. He took as his subject *Diseases of Children*, and dealt with it in a masterly fashion.

Mr. W. A. Brockington, Director of Education for the County of Leicester, gave a lecture on *Common Sense in Educational Methods* on February 18th. He made a stirring appeal to the teaching profession to rise to the larger responsibilities of modern educational methods. The lecturer rejoiced that the mediæval view of education, as a disciplinary process, had been supplanted by the policy of training the childish mind in actual sympathy with its environment. "In no country," continued Mr. Brockington, "did the teacher enjoy the same liberty as in England. But that was a blessing fraught with great responsibilities, and the teacher who was content to go on now as under the old codes was in a worse state than before. Then he was under some restraint, now he was a lunatic at large"!

A special Lecture was arranged for March 13th, when Mr. E. G. A. Holmes, late H.M. Chief Inspector of Schools, spoke on *The Montesori System of Education.* As so many people were unable to get tickets it has been decided to repeat the Lecture at the University on Tuesday, April 22nd.—*Miss A. J. Dawes.*

The Cheltenham Society.—The winter session has been concluded by two interesting Lectures given in the Ladies' College, one on February 20th, by Miss E. Lidbetter on *The Montessori System,* and the other, on March 13th, by the President, Mrs. B. Auden, M.A., on *Pre-Preparatory Training.*

Miss Lidbetter's lecture attracted a good audience, who followed it with close attention and much interest. She described Mde. Montessori's methods, which she is engaged in carrying out in a Montessori School near Cromer, and showed the various Montessori apparatus and materials used by the pupils. The lecture evoked an interesting and informing discussion, in which it was suggested that Montessori methods needed considerable modification before being applicable to English children, that they would require, in every case, a largely augmented teaching staff, as well as a considerable augmentation of the average amount of time and patience at the teacher's disposal, that they were costly, and that discipline mush precede liberty.

This last line of argument formed the keynote of Mr. Auden's Lecture on "Pre-Preparatory Training" chiefly as it affects boys. Taking the educational ladder as reaching from infancy to the university, he took the "pre-preparatory period"

to mean that between infancy and the educational period of the small school—a period usually watched over by the mother and the governess. The lecture was full of useful hints as to food, sleep, health, and amusements of young children. While criticising the Montessori system, he too insisted on the need of training in accuracy which that system does so much to establish. He insisted especially on the need of making a small boy an accurate reader before he proceeds to other subjects. He considered that the aim of pre-preparatory training should be quality, and not quantity.

There will be no more general meetings of the Cheltenham Branch until next October, when it is hoped that an interesting programme of lectures, already in contemplation, may be arranged. —*Mrs. L. M. McCraith-Blakeney.*

The Exeter Society.—The second meeting of the year was held in February at the University College, when Miss Norah March, B.Sc., read a paper on the "Teaching of Sexual Hygiene." She gave first some reasons for believing that sex studies are necessary, and then proceeded to show how the subject could be approached simply and naturally, without any undue emphasis, through a Nature Study course, in which suitable and graded types found their place. Dealing with moral and spiritual aspects, she laid much stress on the fact that here, even more probably than elsewhere, personal efficiency and tactful treatment are required of the teacher.

The third meeting was held early in March, when Mr. Marshall Jackman gave an address on "An Experiment in Teaching Arithmetic" (see CHILD-STUDY, July, 1911). Some discussion followed, and then, votes of thanks having been passed to Mr. Jackman for his lecture, and to Alderman John Stocker, chairman of the Exeter Education Committee, for taking the chair, the last meeting of the Spring session was concluded.—*Miss A. J. Walker.*

The Halifax Society.—Dr. P. Sandiford, of the Department of Education, addressed the above Society on March 5th on "The Inheritance of the Child." The lecturer spoke on the recognition of the importance of heredity in dealing with the education of children, and supported his conclusions by many arguments from the eugenic standpoint.

Dr. Sandiford showed the keenness of the enthusiast, and when it is stated that he held the interest of his audience for an hour, part of which was devoted to an explanation of Mendelian principles of heredity, some slight idea may be formed of the deep study and hard thinking which had been brought to bear upon his work to enable him to explain so clearly the intricacies of such a subject.

By means of diagrams the "genius will out" theory was shown in the Darwin family, "deaf mutism will out" in the case of another family, and "taint will out" in another case even to the third and fourth and fifth generation.

The mathematical precision of recurrence of certain types was almost uncanny, and, given the requisite knowledge it seemed to be quite easy to forecast the number of blue-eyed people which might be expected in a family compared with the number of brown-eyed people.

The lecturer insisted, as his conclusion, on the importance of awakening in the minds of all educators a craving for such conditions as would enable all teachers to study and train the individual child.—*Mr. J. Arrowsmith.*

The Hartlepools Society.—A Hartlepools Child-Study Society has been formed. In October last a few inquiries were made in various directions, with a view to discovering whether a Society would be likely to meet with success. The results seemed to be satisfactory. Miss Louch sent pamphlets and prospectuses, which were circulated, and at length application was made to the General Secretary for a lecturer to come to the Hartlepools for the inaugural meeting. Mr. H. Holman kindly consented to give the inaugural lecture, and an audience of well over two hundred met to hear him on Saturday, March 15th. He gave a delightful address on "The Aims and Purposes of a Child-Study Society." It is quite safe to say that Child-Study was the chief and perhaps only topic in many households that week-end. The meeting was presided over by Mr. W. R. Owen, J.P., Chairman of the Elementary Education Committee, who, with other members of the Education Authority, has evinced much interest in the movement.

Mr. Holman forcefully and in a charming way showed how a Child-Study Society could help the mother, the teacher, and the doctor, and how the Society could be helped by them. He indicated the various directions in which a Child-Study Society would work and mentioned two matters upon which members might make profitable enquiries—the matter of children's literature and that of picture shows.

Questions were asked and answered. A business meeting followed and eighty members were enrolled. An influential and fully representative committee was appointed, and it was decided to arrange for a lecture late in April.

So far as can be gathered much enthusiasm has resulted from Mr. Holman's visit, and it is somewhat confidently anticipated that the membership will be much increased shortly. An enthusiastic supporter of the movement has appeared in the person of Miss M. Manley, of St. Hilda's College, Durham, who has secured several members to the new Society and has suggested that it shall not be confined to the Hartlepools but that it shall include the neighbouring towns and district.—*Mr. Arnold T. Prentice.*

The London Society.—Dr. Kerr's address

on *Brain Mechanism and Handwriting*, delivered on February 13th, at which there was a large attendance, has been specially written for publication with Illustrations in CHILD STUDY. It will appear next month.

The lectures for April and May are :—Thursday, April 10th, *Child-Study and the National Health*, by H. Holman, M.A., Chairman : Professor H. R. Kenwood, M.D., F.R.S.E. ; May 1st, Discussion on *The Parent and the Adolescent*, opened by Mrs. Cloudesley Brereton and Mr. Cyril Bruyn Andrews, Chairman : The Hon. Sir John A. Cockburn, K.C.M.G., M.D.—*Mr. W. J. Durrie Mulford.*

The Tunbridge Wells Society.—On February 4th, with Mrs. E. L. Pontefex, the president, in the chair, we discussed the question of "Physical Education." Mr. L. M. R. Gordon, B.A., said that thirty years ago drill in the schools was the "Army system," taught by drill sergeants with apparatus or dumb-bells, and development of the biceps was the one consideration. This form of exercise though salutary to public school boys in moderation is not suited to children. Small boys of eight or nine are strained and tired with "straight arm balances" on parallel bars. In the Swedish system dumb-bells are tabooed and apparatus is different in kind. Gradually introduced, so that all the muscles are strengthened, the aim being to expand the chest and make them alert and smart. Under Lieut. Grenfell's system a class does about fifteen different exercises in fifteen minutes, so as to promote constant change of movement. In the middle of the lesson one or two games are played and a rest of about five seconds is given between each exercise. The "cautionary words" of the instructor should be spoken slowly and the words of command sharp and smart. The class should consist of twenty, and last half-an-hour, preferably in the open-air. Breathing should be natural throughout.

Mrs. Leach, as a parent, spoke about our responsibilities and the necessity of studying the individuality of each child. One must not preach the abstract, but show methods by which faults such as curvature and incorrect attitudes can be corrected. The mind can be trained in alertness and concentration at the same time as physical and muscular training.

Mr. Lock, from the medical aspect, said physical exercise was a natural instinct and only deficient in exceptional cases. Children can endure more violent exercise than men. Long distance running should be discountenanced. Children must not overdo exercises. He prefers walking, running, skipping, dancing and swimming, bringing every muscle into play. Cricket and football are good for boys, lacrosse for girls. —*Mrs. Janet E. Pontifex.*

Notices and News.

Lectures on Defective Children.—Miss Bertha Jones and Miss Dixon have arranged for Dr. Shuttleworth to give a course of five lectures on "The Principles and Treatment of Training of the Defective Child." They will be given on Wednesdays, May 7th, 21st, June 4th, 18th, and July 2nd, at 7.30 p.m., at 75, West Cromwell Road, Earl's Court, S.W. Those wishing to attend the course are asked to communicate with Miss Bertha James, 75, West Cromwell Road, S.W., about fees, etc., as soon as possible ; or with Miss Dixon, 53, Greyhound Road Mansions, S.W.

Mr. T. G. Tibbey, B.A., has been appointed head master of an L.C.C. school which is used as a Practising School for Students in Training. All who know Mr. Tibbey and his work in Child-Study, will congratulate the school, the students, and him.

Rivista di Psicologia has been sent to us. Will someone who knows Italian and psychology be good enough to review this review for us? We are unable to pay for literary work.

A Course of Popular Lectures on Hygiene will be given at the Royal Sanitary Institute, 90, Buckingham Palace Road, on Tuesdays, April 1st to May 6th (inclusive). Admission is free.

The Physiology of the Adolescent Girl.—A course of three lectures will be given at the Battersea Polytechnic, Battersea Park Road, S.W., on Thursdays, May 1st to May 15th, at 5.30-6.30. Fee, 5s., to be prepaid.

Eugenics in Women's Social Work.—A course of three lectures at 92, Victoria Street, S.W., on Wednesdays, April 9th to April 23rd. Fee for course, 3s., single lectures, 1s. 6d.

Professor J. A. Green, our readers will regret to hear, is unwell, and will not be able to give his promised lecture to the London Society on April 17th. All will wish him an early recovery.

The Parents' National Educational Union hold their 17th Annual Conference at the Caxton Hall, Victoria Street, S.W., on May 6th-8th. Details can be obtained from Miss E. A. Parish, 26, Victoria Street, S.W.

Reviews.

Experimental Studies of Mental Defectives. By J. E. WALLACE WALLIN, Ph.D. Pp. 155. Warwick and York, Baltimore, U.S.A. Price, $1.25.

"Dr. Wallin has presented the results of a systematic study of the Binet-Simon scale when applied to a colony of over three hundred epileptics...These children resemble more the typical laggard of the [elementary] schools than the typical feeble-minded child, and they require special educational treatment...This monograph makes a valuable contribution to the critique of

the tests," says Dr. Guy Montrose Whipple in the preface. These words and Dr. Wallin's high reputation are more than sufficient recommendation to those interested in the subject.

Childhood: its Nature, Nurture, Psychology and Education in Relation to Social Life. By FREDERICK DAVIS, B.Sc. Pp. 90. John Bale, Sons, and Daniellson, Ltd.

This is a book very difficult to review. Written as a thesis for honours in the B.Sc. degree at the London University, it has, apparently, been turned into an advertising medium. There are some interesting and suggestive passages in it; but there are others which defy the reviewer's understanding, e.g., " Psychology, as the working of mind is productive of thoughts " (p. 90).

The Service of the Hand in the School. WOUTRINA A. BONE. Pp. xviii., 212. Longmans, Green and Co. Price, 3/- net.

This is an altogether admirable book, written mainly from what Dr. Nunn calls the " instrumental" point of view, *i.e.*, " taught for the sake of its application to some other subject." But the " subject " point of view is not neglected, and both technique and progressive skill are kept in mind. Best of all is the joyous spirit, and the ministry of pleasure, which pervade it. It would be difficult to find a more stimulating, suggestive and helpful book for the practical teacher engaged in class work. The "what" and " how " of actual lessons are clearly and adequately dealt with and generously illustrated, and the great underlying principles of handwork are revealed. The topics treated are:—Values of handwork; schemes of work; the baby room; toys; decorative work; social service and group work; history of handwork, etc. It is the best book of its kind that we know.

Marriage and the Sex Problem. By Dr. F. W. FOERSTER. Translated by Meyrick Booth, B.Sc., Ph.D. Pp. xx., 228. Wells Gardner, Dartner and Co. Price, 5s. net.

The able and distinguished author, who is Special Lecturer in Ethics and Psychology at the University of Zürich, writes from the standpoint that " (1) The foundation of all sound education in sex must consist in *distracting* the mind from sexual matters, not in directing it towards them. (2) The problem of moral preservation in this sphere is a question of *power* far more than of *knowledge*. Now, it is upon these two fundamental facts that the sexual education of the traditional Christian type has been built up." Those who accept these premises could hardly wish for a better advocate than Dr. Foerster.

The Life of Benjamin Waugh. By ROSA WAUGH. T. Fisher Unwin. Pp. 320. Price 5s. net.

An interesting account of the life of the devoted and triumphant champion of children's rights—the " Children's Man "—and of the work of the N.S.P.C.C. It shows clearly and convincingly that any and every sound effort for the good of the child must be based on scientific knowledge and understanding. It is truly said of Mr. Waugh that he used " scientific methods of investigating and dealing with *facts* bearing on the welfare of child-life, facts, which became the fuel of his zeal " (p. 58). Mr. Waugh himself said that the successes of his work " were a triumph of facts, patiently and widely collected...and of a painstaking study of them " (p. 285). Two of his *dicta* are well worth the consideration of teachers: " Good servants of children are both born and made, but they are more made than born...Besides listening to what little children say, learn what by such sayings little children mean " (p. 225).

Twelve Years with My Boys. Methuen. Pp. 248. Price 3s. 6d. net.

This is an interestingly strange book, by an anonymous author about her experiences with a Bible Class for adolescents. She appears to have trusted to the light of nature and grace to rediscover the principles of education and the facts of adolescent nature. The results will easily be imagined by those who know psychology and education. For educational guidance the book is likely to be dangerous to any reader with less originality and ability than the writer, and without some really scientific knowledge of education. As a self-revelation, graphic and ingenuous, it is excellent material for a psychological study.

Educational Handwork, the official organ of the Educational Handwork Association. Monthly, 3d., post free 4d. Sir Isaac Pitman and Son, Ltd.

This very useful monthly appears in a new and artistic form. It deals with all the usual handwork subjects, nature study, physical education, etc., in a capable and helpful manner, and has a tutorial column for the Froebel examinations. The February number includes the report of an address by Professor Adams on " Imitation and Initiation."

Roswitha. By OTTO ERNST. Translated by A. C. CATON. Pp. 322. From 22, Mount Carmel Chambers, Kensington, W. Price, 5s. net; postage 4d.

Another charming book, though it lacks the delicate finish of the author's shorter works. The poetry of child life—not the psychology as some foolishly say—is given in roseate hues. Everyone should strive to see children as this poet sees them, for it is a vital aspect. The translation makes one wonder if the original can possibly be as good.

PUBLICATIONS RECEIVED.—*The Journal of Education; The Educational Times; The Parents' Review; Child Life; L'Education Familiale; Educational Review (U.S.A.); Journal of Educational Psychology (U.S.A.); Rivista di Psicologia; The Woman Teacher; School Hygiene; The Journal of Experimental Pedagogy; The Training School (U.S.A.).*

MR. EDWARD ARNOLD'S LIST.

EXPERIMENTAL PEDAGOGY and the PSYCHOLOGY of the CHILD.

By Dr. Ed. Claparède, Professor of Experimental Psychology, University of Geneva. Translated by Mary Louch and Henry Holman. 5s. net (post free, 5s. 4d).

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AN INTRODUCTION TO CHILD STUDY.

By W. B. Drummond, M.B., C.M., F.R.C.P.E., Medical Officer and Lecturer on Hygiene to the Edinburgh Provincial Committee for the Training of Teachers. Cloth, 6s. net (post free, 6s. 4d).

THE CHILD'S MIND: Its Growth and Training.

By W. E. Urwick, M.A. Crown 8vo., cloth, 4s. 6d. net (post free, 4s. 10d.)

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Editorial Notes.

The Challenge to the N.U.T.—A plea on behalf of the good work done by the N.U.T. appears in our "Correspondence." We fully grant all that is claimed, and much more, for it has done splendid work for teachers and, therefore, for the children. But it has never been primarily an educational association, though it has very likely done more for education by being mainly a trades union than it would otherwise have done. At present it is only following, and that feebly for so mighty a society, where others have been leading. Has not the time come for it to lead?

A Word to Parents.—We would like to suggest to parents that they should carefully study Miss Ryan's translation of Professor Bidart's articles on "Parent-Educators," and make observations and experiments on their own children on the lines he suggests. There is little true child-study on the part of parents unless something of this sort be done; and it is likely to prove even more beneficial to the parents than the children. It is in this way that the real scientific attitude of mind is built up, and thereby comes a great increase of power in understanding the work of abler and more expert investigators. We should be glad to publish the results of any such efforts.

Nervous Mechanisms and Writing.

By James Kerr, M.A., M.D.

Abbreviated from a lecture to the Child-Study Association in London, February 13th, 1913.

Writing is not merely the tool of knowledge, but also a tool which has made much knowledge possible. It is one side of speech symbolism, reading being the other. Writing grew out of pictures which became conventionalised. In the museum at Oxford is the hieroglyphic inscription of one King Sent, whose date is assigned 4600-4800 B.C. His name signature or cartouche is interesting as it contains the crenate pictograph representing water, and a hand symbol. These two signs became alphabetic sounds and have descended to us through half-a-dozen literatures and sixty centuries as the letters N and D. No doubt the teaching of writing has run along as unchanging grooves as the letters themselves.

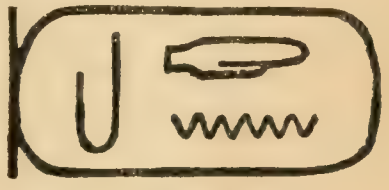

Fig. 1. Cartouche of King Sent.

The beginning of writing has some educational bearings. It is not an acquirement from long heredity. A child breathes or walks naturally, but writing is no natural necessity; it is purely artificial and conventional and must be taught. The infant understands and speaks before graphic symbols have a meaning for it. Then it scrawls imitatively and invents explanations of meaningless marks. Drawing precedes writing in its attempts at education, just as pictures and hieroglyphics preceded alphabets.

With such recent acquirement and slight heredity great variations in the capacity to deal with reading or writing should exist compared with the older forms of heard or spoken speech.

The various mental speech functions can be represented by diagram 2.

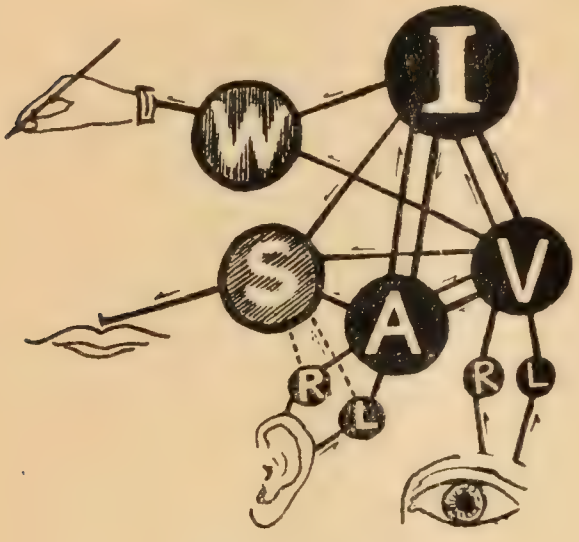

Fig. 2. Scheme of Speech Centres.

The first access of speech is through the ear to the two centres on the right and left sides. These again are represented in a higher auditory centre A, which is situated at the posterior third of the first temporal convolution on the left side. There are association centres higher than this (I) where apperception takes place and the heard speech rises into consciousness. In the early stages of development these lower centres act whilst the higher and intellectual centres are but feebly developed, and the infant babbles, reproduces words heard (echolation) or scrawls, conditions which persisting at a later age generally indicate mental feebleness from grave want of development or control of the higher centres.

Seen words similarly pass from the eyes to the right and left vision centres in the occipital lobes, and from there are represented in the higher visual (V), word centre in the left angular gyrus. From there apperception occurs and if necessary motor centres for speaking (S) or writing (W) are set in action. If this centre V is ill-developed or wanting, bad spelling or actual word blindness is the result.

Regarding the act of writing alone,

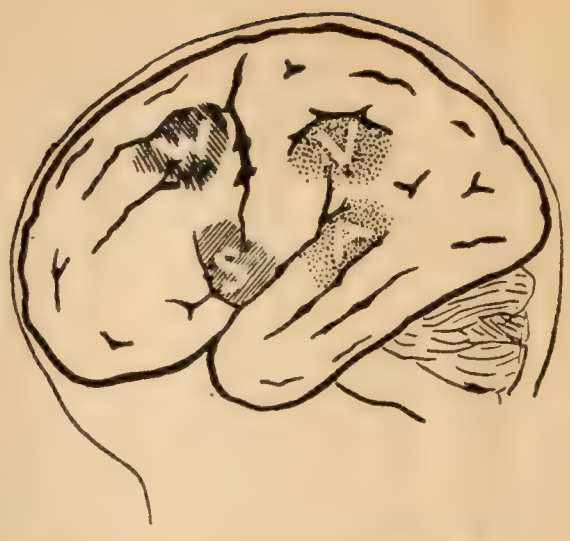

Fig. 3. Brain Centres for Speech.

writing comes about through the intellectual centres (I) stimulated by some means from sensory centres, as for instance A or V, setting the proper muscular mechanisms of hand or otherwise, in action to reproduce the forms of letters remembered. Whether there is a writing or pictorial motor centre has been disputed, but where motor memories of objects are stored is the writing centre (W). From muscle memories and from visual memories the spatial concept of a letter form is built up, in this writing centre.

In the case of written words the centre is probably mainly set going through the word vision centre (V), but there is some separate memory of letters as most word blind scholars write letter forms quite well, but do not construct correct words, and in some cases even transcribe incorrectly like the boy in whose exercise the transcription of "Just as he reached the open country," was "Gnau acnd he whend the opnpar mafethe."

Vision itself is not necessary for writing. At a medical meeting some dozen years ago, where several children with these brain defects were demonstrated for the first time, an older patient also came, whose trouble was, however, only recent. He was a business man who had had a slight nervous seizure one afternoon, with a little dragging of the foot for a day or two. He recovered completely but for one peculiarity. He could

do business, write out his letters and cheques to people, date them, cross them and sign them correctly, but then, although he saw the cheque and the writing clearly he could not recognise a word. The visual word centre (V) was cut off from the visual centres (R and L), and where it was cut off could be accurately located because the left half of each retina was found to be blind. He had had a slight hæmorrhage which disturbed the tract between the left vision centre and the eyes, and also cut off the vision centres (R and L) from the visual word centre (V) without damaging this centre itself. He could therefore still use V to set the writing centre going, although the writing seen was not available for recognition by V.

In word-blind children, however, it is this word vision centre V itself which is undeveloped, and there is no actual blindness in any part of the eye.

The only proper purpose of vision in writing is for placing the writing well, and for spacing the lines. If an attempt is made to write with the eyes shut the writing is not on a straight line, but approximately on a curve with the elbow as centre. Writing with a comparatively large paper shield on the pen to prevent the point being seen does not materially affect the writing. For teaching single letter forms the muscular sense is the most important, and vision should be avoided. It was to emphasise this that I stated eight years ago that children in the infant school should be able to write letters as big as their hand on the blackboard with their eyes shut. Since then Dr. Montessori is said to actually blindfold her babies whilst teaching them letter forms by feeling letters cut out of sandpaper.

A good game for infants who have half learned their letters would be to put a large square cardboard collar round each to prevent them seeing their hands, and then let them recognise such sandpaper letters by feeling.

Letter forms are spatial memories, stored as all memories of space must be, as muscular memories. Later when reading has become sub-conscious it is doubtless almost entirely visual, but at first it is largely muscular through the external muscles of the eyeball.

The retina is not equally sensitive all over. At the centre of the retina for a small area, hardly more than the fiftieth of an inch across, its sensitiveness is enormously increased, and over that little yellow spot a very sharp image has to be thrown; beyond that region all becomes vague and filmy. When an object of any size is looked at only a little bit is seen at a time. For instance, no one sees the whole face at once of another person within twelve feet, and with a newspaper a foot off only fifteen to twenty letters are clearly seen at once over an area which could be covered by a sixpence. The eye is rapidly swivelled on its axis till the image of each part of the object regarded has fallen on the yellow spot, then all is mentally pieced together and from the muscular movement an estimate of length, breadth and height built up.

A young child does not manage this mental synthesis rapidly, if it is asked to describe a picture shown it only notices a single object or part of an object. Indeed it is not always easy to get through to the intellect at these early ages. As regards hearing by the ear the younger the hearer the acuter it is, but even such a simple test as a watch tick is practically useless from the child's mental reaction failing. We do not get through. The vision, also acuter than in later life, does not give a true result with test type, unless additional reinforcements, such as sweets, aid intellectual concentration on the task.

One way of getting through is by using stronger and more powerful messages. A big stimulus to the eye by a brightly lighted object, or by a large image stimulating a greater area of the retina, and also requiring larger angular movements of the eyeball all combine to give a more voluminous impress to the intellect. For young children then to get a massive in-

tellectual perception there must be good lighting and large objects, and the larger and more brilliant the objects, within reason, the greater the probable educational effect.

The scholar first admitted to the classroom has a comparatively undeveloped eye. The axis is relatively shorter than it will be when its permanent growth is reached. To see a distant object clearly the muscular effort of accommodation has to be made. Fortunately in early years there is great power of accommodation for a short time, although it easily fatigues. When in school especially with fine work, relief from fatigue is sought by sacrificing sharp images to big fuzzy ones. Bringing the eyes closely up to the work greater nervous stimulation is obtained, and also larger eye-movements, another gain from nearness. This near eye work habit saves immediate nerve effort and fatigue to some extent, but leads to congestion and eye-strain being accentuated in all continuous or fine work where steady focus and convergence has to be maintained if the objects are to be well seen. This slight congestion and strain appears an important factor in the production of the so-called school or work myopia which chiefly originates and progresses in the growing period, especially during malnutrition or debility.

There are a large number of muscular adjustments of hand, eye and body in the act of writing. The point of the pen has to be kept in the plane of the paper, the hand to be moved evenly from left to right, the hand somewhat pronated in writing each word to keep the slope parallel. The whole body has to be balanced, the movement of respiration compensated, and even the feet are called in to preserve adjustment. All these movements have to be balanced and coordinated to a fiftieth of an inch and a fiftieth of a second.

The fine hand movements are the last of the simpler movements to be gained. Simple tapping tests, placing a needle in a fine hole, touching a small surface with a point, and so on, show that there is a steady gain in accuracy and rapidity during school life and a steady diminution in rapidity of fatigue. The undifferentiated brain of the youngster attempting fine finger work runs over with effort and rapidly tires. Sewing is even worse than writing. The overflow shows itself in the effort to control the fingers which results in an almost spasmodic grasp of the pen to maintain the necessary pressure by the index finger and thumb. No teacher can

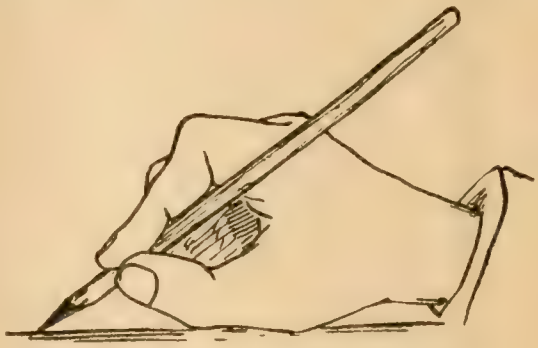

Fig. 4. Normal Writing.

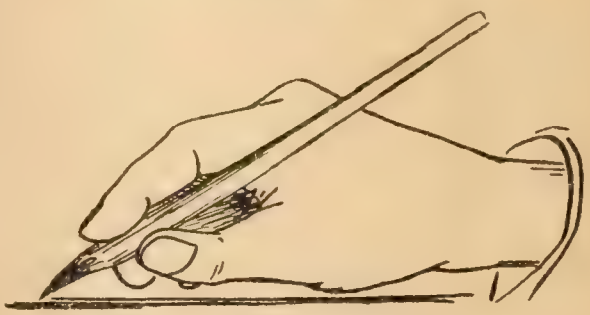

Fig. 5. Child's Writing.

get a class of infants to write otherwise than with the finger sharply bent up, as shown in Fig. 5. Faces are contorted, tongues put out, feet turned round the seat supports, fatigue comes on and the child brings its eyes down within four or five inches of its work, and may even stand up bent over it. The necessity for the avoidance of all fine lines or dots is evident. The smallest object conveniently seen by a normal eye in good light subtends an arc of one minute, but the eyes of many children are not normal, and in most places in the infant school light is not good, more probably below one foot candle than the 2.5 foot candles it should be. Comparing a number of copy books there is so much ruling and spacing that learning to write is made largely an eye

task, instead of a muscle-sense training, and further injury is likely to be set up by the muddling and straining of the eye thus produced. The very thing the copybooks make much of is the thing which ought to be eliminated, eye-work. There are many regulations and declarations about the sizes for print, but scarcely any notice is taken of writing. The smallest size print suggested for school use is 11 point type, and for children under nine 14 point type, but there are rulings in dotted lines for copybook writing smaller than the print for reading.

Legibility of writing, too, has to be remembered as a mental habit. Not more than one-fifth of the copies were in readily legible script. In English writing, as contrasted with German, vertical or upright writing has no advantage over a moderate slope, and the amount of slope within a few degrees makes little difference provided the spacing of the letters and words approximates to the relations of print. The letter body should approximate to a square or circle with the intervals between not exceeding one-fifth the width of the square. In some copybooks the intervals are as great or even exceed the letter width. In others the words are so crowded as to be almost inseparable. Ruled copybooks to guide the forms of letters should not be required. If a copybook must be written then only thick blue or black levels for the eye such as the thick lines in Vere Foster's bold writing books, which would be ideal if the dotted lines were omitted. Numerous dotted lines are straining and conduce to spurious result work.

Turning now to the infant who can talk and who has begun to scrawl, he conventionalises and idealises at once, two strokes at right angles or perhaps parallel are explained as a man and his pipe, or a badly drawn ellipse and a stroke or two may be a bird, or a dog, or a house. Soon, however, form emerges, much conventionalised so that three sides of a house may appear at once, and to even a late stage a house window looks like a postage stamp up in one corner. Much can be made of this drawing by a good teacher, and the impulse can be worked in school to learn alphabetic forms and writing. These alphabetic forms being purely spatial memories, can be learned by all sorts of ways of bringing in muscular movements, what in workshops would be called dodges. Plasticine, clay, sticks, shells suit, most satisfactory of all are short lengths of covered electric wires which can easily be bent to letter shapes.

The intellect and will must be brought in spontaneously by allowing or encouraging the child to draw representations of its work in its own way, and to print or write on them. The learner often prints the reverse way, but that need not be troubled about. It seems to have been the original way. The cuneiforms, which extend through about five thousand years from oldest to most recent, all have the

Fig. 6. Cunieform for Nineveh.

thick, deep ends of the strokes to the left, as if masons had carved them, with mallets in their right hands.

So too, the early Greeks passed through this phase, then wrote ploughwise, alternating directions, or serpentine way around their tablets before they settled into the left to right which has descended to European culture. This question of direction brings up that of righthandedness on which it depends. For some reason not satisfactorily explained the centres for speech and possibly for other complicated fine movements are generally on the left side of the train. This corresponds mainly to the muscles of the right side of the body, but there is an intimate relation between both sides. In Professor Scripture's experiments on fine finger movements practice with the right hand was found to effect improvement in the left hand also. Two-handed training, ambi-

dexterity, would not repay the trouble in school and will not be discussed, but the matter of the left-handed pupil cannot be passed over.

A teacher in Berlin recently found that among 17,000 elementary scholars three per cent. of the girls and five per cent. of the boys were left-handed. Heredity was noticeable in sixty per cent. Speech defects were three times more numerous among left-handers, although possibly other variations such as six toes to a foot might also have been found excessive.

The practical and important question is, Should the left-hander in school be allowed to remain left-handed, or taught as if right-handed? When pupils come into school they have already gone a long way in education; they have learned a language, and made many brain connections for speech and its relations, and there is some risk of upsetting these arrangements if the right hand is now substituted for the left. On the other hand they are still plastic and the left-hander whose thumb goes first in writing, writes in a different bodily symmetry to the right-hander whose little finger goes first, so that if a left-hander attempts to write with the right hand the slope is backwards, and most people can write with their left hands if they write mirrorwise.

It is a considerable advantage nowadays to a dweller in cities where arrangements are for right-handers, where death threatens unless he steps off the motor 'bus left foot first, and where familiar tools are for the right-handed, that he should have a chance of growing up somewhat to pattern for the common life. Although not to be too rigidly insisted on, yet it would probably be an advantage that in the infant school at least left-handed work should only be very exceptionally permitted.

Finally, whatever methods or styles of writing are taught there is a great subconscious readjustment of all arrangements which takes place at puberty, when the hand is formed and the character fixed. This is only referred to now as an epoch in writing worthy of further study.

The natural way then to approach the teaching of writing is through the early pictorial efforts.

There should be much large scale blackboard work standing out of the desks. Continuous writing lessons are wasteful of time, tiresome and fatiguing. Short intervals are preferable, for spontaneous drawings with printing or writing over them, to illustrate lessons even then going on. Meanwhile also regular but short exercises in the elements of letter forms should be done by large shoulder movements in freearm work on the blackboard. No pencils, paper, pens, ink or needles should have a place in any infant school. The letter elements, oblique straight strokes first, then ellipses, circles and vertical or horizontal strokes, squares, rectangles and curves should all be done standing out of the desks at large boards.

Some symmetrical figures with both hands may be permitted in the first few months to give larger spatial perceptions. The earliest efforts may be slow, but slow accuracy must never be asked for, only rapidity so long as there is a general attainment of what may be termed legibility. Subconscious adjustments will give greater accuracy later. With work of this kind graphic expression will soon come, and greater accuracy can be got by making model letters with plasticine or bent wire. The sand tray as a means for early writing is exceedingly convenient. The only writing media in the infant school should be the sand tray and the blackboard. The little squares of cardboard, commonly used and miscalled freearm work, are makeshifts; they have some advantages over paper, but all kinds of disadvantages in the dustiness of the blackboard without the advantage of the sand tray or the blackboard educationally.

For formal writing exercises after the infant school only paper with the thick guiding lines to keep the lines of the script straight, but not to help the letter forms, and after the lowest classes no lines at all, should be necessary.

The whole idea of this teaching is that writing itself is trivial educationally, and

that it must not be treated as eye work, but merely as mechanical muscular work to be relegated to the subconscious and automatic as soon as possible.

Pictorial speech is, however, a very late evolution and a large section of the population are below the capacity of attaining subconscious writing action or reading. Somewhere about five per cent. will never attain writing beyond the symbol of their own name, and probably another five per cent. will only attain it in such degree that it will not be of practical use in later life. The present mode of education is costly in waste of time and keeping many down to a level to which others can never attain. Much greater classification of schools is required. The idea that reading and writing are a necessity in the earliest stages of school life will have to be abandoned if the greatest educational effect is to be got in the short time at disposal.

A careful study of educational methods by modern laboratory means in experimental classes would in the course of ten years effect economies which would repay the cost a hundredfold, in such a centre as London. Till bigger rooms and more blackboard space are at disposal efforts must be concentrated on the idea of making educational presentations to the budding intellect massive and voluminous by having things clear and bright and large, and on light rooms, big objects and free, large, rapid movements, not in continuous but in intermittent lessons in the earliest years, so that writing soon becomes subconscious, and the individuality finds its own unhampered expression in later life without the need of copybooks or eyestrain.

Modern Psychology and the New Constructive Movement in Education.

By W. H. Winch, M.A.

A paper read before the London County Council Conference on Handicraft. The lecture form is preserved.

A psychologist who is asked to-day to give practical directions to Educational Theory and Practice is apt—unless he possesses a confidence quite prophetic—to feel embarrassed. Much of his doctrine is based on difficult experimental work, which the layman will scarcely understand, and his conclusions are drawn by epistemological methods — such as evaluation by means of correlation formulæ—which will also seem, except to the mathematician, somewhat of a mystery.

The day for the brilliant sweeping guesses which sound so seductive, give such comprehensive, albeit vague directions, and which still, *faute de mieux,* constitute the bulk of text-book writing, is, among psychologists themselves, long since over.

And beyond these difficulties and hesitations there is the outstanding and deplorable fact that on many of the most important questions in Educational Psychology we are all of us still more or less in the dark.

What, for example, are the relations between dexterity, mechanical constructive power, and what is vaguely known as intelligence? First of all, what are their relations in young children? Secondly, do these relations change as the children get older? Are these functions highly correlated with one another, and does improvement in one transfer to the others? Quite frankly I tell you that there is on these questions no direct evidence available anywhere on a scale large enough to be conclusive. So I am afraid that I shall have to approach the question about which you have invited me to speak to you to-day in an indirect manner—a frontal attack is out of the question. But it may be found not entirely without profit for us to consider a few of the present-day psychological conclusions which have bearings on the questions before us.

First of all, sensations of movement are being very severely, and, I think, successfully, attacked as sources of knowledge. Very careful experimental work has been done at Yale by Professor Raymond Dodge and Professor Charles H. Judd on the relation between perception

and eye-movements. There seems no correlation whatever.

In Binet's *L'Année Psychologique* for 1908 a quotation from M. Poincaré begins "*Chacun sait que cette perception de la troisième dimension se réduit* to sensations of accommodation and conveyance, etc." A footnote says very bluntly "*Non. Les recherches expérimentales de B. Bourdon* (La perception visuelle de l'espace. Schleicher, 1902) *ont montré que la sensation d'accommodation est à peu près nulle et de nul usage, que la sensation de convergence ne permet de distinguer que très grossièrement les distances relatives et seulement pour des objects très rapprochés.*" And those of you who know anything of the experimental pedagogy of Germany will probably be aware that Professors Meumann and Lay have differed so acutely on the question of the knowledge derived from sensations of movement that the *Zeitschrift für experimentelle Pädagogik*, formerly edited by them jointly, is now edited by Meumann alone, and that a controversial tone has developed between them which, though not uncommon in Germany, is only paralleled here by the argumentative methods of politicians.

You will find references to these things in a footnote in Professor Sully's revised handbook—an edition just issued—on pages 509, 510, in a note on page 109, and in a very important note on page 173 on the function of movement in the development of our perceptions of space. Professor Sully quite realises that the current of experimental psychological knowledge is setting against the older view.

Well, all this seems serious, very serious to those who swear by "motor" things; and others who swear at them will correspondingly rejoice. But both the dismay and the joy must be short-lived. For all that this means is that psychology is tending further and further away from the older sensational view, and that sensations, far from being the all-important factors of knowledge, are merely intermediate factors within a total conative process, they neither begin it nor end it, they are there *for* it; it is not merely a complication *of* them.

For though mere movement is apparently of strikingly little value to knowledge, yet I should not be talking to you here to-day with the view of furthering the advance of the Constructive Movement, did I not think that the trend of modern psychology was distinctly in favour of constructive work in every department of educational effort, manual among others. One of the writers to whom I have referred, who quoted the experimental work of Bourdon against the knowledge value of eye-movements, repeats with approbation the following dictum from A. Hannequin: *L'esprit ne comprend pleinement que ce qu'il peut construire.*

Another of the writers to whose work I have referred—Professor C. H. Judd, who has done much to destroy the older view about the knowledge value of sensations of movement, says: "We are thus led from our considerations of the relation between retinal images and movement process to recognise the fact that after eliminating sensations of movement we must recognise the paramount importance of motor adjustments in an entirely different sense" (Yale Psychological Studies, Vol. I., No. 11, p. 415). Roughly, I may put the matter thus: Sensations from eye movements do not inform us as to the perception of the thing; the movements are made so that we can see the thing, when we can see as much as we want to see, we move our eyes no more. We do not, as it were, say within ourselves, "I have moved my eyes so much, therefore the thing is so much from front to back." We say, "Now I can see how deep it is, so we send no further signals for further adjustments."

I have gone into this question at some length, and perhaps so as to confuse some of you a little. But I can see in the near future that a great many arguments will be drawn from this débâcle of the sensations of movement as factors in know-

ledge. They will tend to reinforce an intellectualist rather than a conative view of mental life—which in my judgment would be educationally disadvantageous, both theoretically and practically.

Let us now pass to some psychological principles which are more obvious in their application to constructive work. First of all we must understand that the "law of forward movement," as Professor James announces it, no longer blocks our way. There is no need to think of nervous currents always running from sensation to movement. This was really a justification of the root error of mediæval pedagogy, viz., that you must know all about a thing before you began doing it. James, as you know, is a pragmatist, which means a philosopher who holds that knowledge is only truly knowledge because it results or can result in actual successful activity. Experimental psychology, in one sense, goes further and says, if I may speak popularly and crudely, that knowledge is obtained by doing. It is very curious to see how on this view, reproduction and production, which educationists sometimes used to call *pulling up the plant to see how it was growing*, are the very essence of the growth itself, without which indeed, little growth would occur at all.

All this is true of all educational work, not merely of the work we call manual; indeed, if the constructive movement in education were merely manual, it would for me be shorn of much of its importance. But it behoves me now to limit myself more specifically to manual work. I am going to assume that all the members of this Committee are in favour of handicraft of some kind throughout our schools. But disputes and difficulties arise when we discuss just what shall be done, and how we shall balance the comparative claims of interest in the immediate practical result, and of accuracy in achievement looked at from an adult standpoint.

I was much impressed when visiting American schools to note a divergence from our own in respect of this balance. The children there, speaking generally, are set to make things which are probably pleasing to themselves and which may appear to them to have some sort of immediate use. For my part, I believe that we in England underwork this principle of the gratification of immediate interest; we do not rest upon it even in cases in which we might most legitimately do so. For if progress in the desired direction can be attained by means wholly pleasant and agreeably stimulating, it seems sheer fatuity not to adopt those means. It is not uncommon amongst uncultivated people to find an abiding conviction that the nastier their medicine is, the more good it does them. A similar view is still very prevalent in educational theory and practice. But I do not wish to go too far and drop into what is called "soft pedagogy." We may find that exercises relatively uninteresting in themselves, which we *do not want* to do for their own sakes, are, notwithstanding, necessary to enable us to carry out efficiently the things we *do want* to do.

Children will take much spontaneous interest in practical arithmetic, they will take much spontaneous interest in learning their tables; but, with some exceptions, not so much. What are we to do? Are we to let the tables go by default? I hardly think so. I suppose rather that we should point out and insist upon the uselessness of our practical arithmetic unless the results are right; and thus help the child to discover the practical utility of tables. We need not invent drudgeries; but we shall find some of them awaiting us here and there all along the educational line.

Let us now apply this principle to the case of manual training. The child likes making things—some things, that is. He must be accurate enough to make the thing; that is, he must judge his distances and his movements so that the things will come fairly well up to the standard, which, in a vague way, he sets before himself.

Psychologically, we most of us, as children, except in school, proceeded in

that way. One thing was equal to another when for our practical purposes it was just as good. Other things did not exist as far as we were concerned. By the way, we still say, "That's nothing," if someone tells us of a thing, say a comet, in which we are not interested. Such was the beginning of our endeavours towards adjustment and accuracy. Can we jump this stage in education? American syllabuses appear to be drawn up by persons who do not think so.

But though I incline to think we cannot jump this stage, I do not think that we can permit children for ever to remain in it. And I take it that it is "right here," as an American would say, that our English methods are superior. An English teacher who read my American syllabuses for me asked, "Where do these American models and occupations lead? And are not the girls and boys going to do different kinds of manual work when they grow up? Should there not be, therefore, as soon as may be found educationally profitable, some difference in syllabus due to this difference of aim?"

And I can myself vouch for the English boys' superiority in workmanship, which may, however, *not* be due to the differences in his education.

But we should perhaps, all of us, both English and American, probably agree in some such statement of aim as the following:—

We want the child to do just those things which render him most constructively disposed, which will make him skilful in thought and movement, and which will make him, as we say, not a mechanic of a particular trade, but capable of easy graduation into all trades.

It is very probable that many of these interesting postulations are counsels of perfection. It is, indeed, very doubtful whether there is such a thing as "general dexterity" at all. I incline to think there may be *some* transfer of dexterity from one set of operations to other sets of a different kind, but there is, as far as I know, little, if any, experimental evidence for it; and we had best suppose, in the present state of educational psychology, that there is little, if any, transfer of this sort.

The practical consequences are of great importance. Firstly, we must aim to move towards practical work of several trades and several occupations, instead of limiting ourselves to one or two. And secondly, we must find out by actual experiment which of our exercises in infant schools and in the lower standards of senior departments are the best preliminaries for these various pursuits.

Your Superintendent of manual work, with whom I have had several conversations on this subject, tells me that the paper cutting and folding which some of you used to describe by contemptuous epithets, was comparatively useless as a preparation to woodwork. If I remember him rightly, he thinks highly of the preparatory value of clay modelling and work with plasticine, and I believe, further, that he is of opinion that woodwork is the best possible propædeutic—if we must be contented with one medium of manual work—to all or most trades. Now all these and contrary opinions can and ought to be tested by means of scientific pedagogical experiment and the results correlated and summarised by valid statistical methods. Until these things are done, we are largely in the dark.

I can hardly hope to take much more of your time or to make further demands on your attention, and I wish to confine myself strictly to psychological considerations, to discuss which your Education Officer asked me to meet you. But there is just one point to which I wish to refer before concluding. There is a curious opinion prevalent to-day among many educationists that if a child begins drawing from objects at a very early age he is somehow being initiated into the principles of the Constructive Movement. Let me say just this: that he can make the thing and draw parts of it as they are, and as they must be, if they are to constitute that thing, long before—years before—he can analyse out the visual sensation which you are asking for when you

tell him to draw the thing as it looks. I ventured to announce this opinion some years ago in *Mind,* in which I criticised some of Professor Sully's theories as to children's drawings; and those of you who read German Pedagogy will know of Kerchensteiner's big research, whose results fully corroborate my previously expressed opinion. Of course, on the basis of the psychology which *begins* with sensation it would seem the obvious thing to do to catch the visual sensation as early as possible, before it becomes corrupted by the other experiences of life. It would then be pure and undefiled by the conventions of the teacher. Alas! I fear it is born corrupt and complicated. At any rate it has become so when the teacher receives the children. What then is the teacher to do? His business is to show the child how to analyse out (for himself *bien entendu*) what he sees from what he knows. But this power to analyse out the visual sensations from a complex percept is a late growth and wants much direction. Meanwhile let us construct things as they are. To draw them as they look is a later business; and in any case, is not likely to help our Constructive Work.

The Development of the Child's Brain.

By Albert Wilson, M.D.

The brain is the most distinctive part of our anatomy. It is the distinguishing feature of our genus. If it does not develop up to the human standard then it falls back, approaching that of the higher anthropoid apes, and such a being is described as mentally deficient, or even imbecile. We must remember that before birth the human fœtus passes right along the chain of evolution. That is to say, it re-represents the lower animal scale; being first after the type of a fish, then like a lizard, and, when more developed, the human brain is like that of the lower mammals, and finally, like the anthropoid apes. The human fœtus has therefore to travel along the whole line of evolution which has taken countless ages in the past. It is a demonstration of how we have evolved from the lower animals. We must not lose sight of this fact, as it explains some cases of insanity and deficiency, where the process of development has been suddenly stopped.

I have seen a brain which puzzled the best of our brain experts. It was only eight ounces in weight and its markings were somewhat like those of a cat. The woman was an idiot. She ate ravenously like a beast and when irritated spat like a cat. There had been some accident to her before birth which had caused a stoppage of development along the mysterious chain of evolution.

The risks to a child before birth are tremendous. It is the most perilous part of life's journey. If it is safely accomplished there is every prospect of a prosperous and happy life afterwards. This is indeed where the key of success in life obtains. It is therefore the basis of child study, which subject is linked with the problem of inefficiency and affords the only true explanation. The social question will never be dealt with successfully except from this standpoint. All efforts, however scientific in basis, such as deficient schools, the Montessori and other many excellent methods are as nothing so long as we do not clearly understand the why and wherefore of this increasing evil and endeavour to stop degenracy at the source. Social reformers of to-day are like men pumping all day on a leaky ship without any knowledge of how to stop the leak, perhaps without proper knowledge of where the leak is. It is the duty of societies such as this to go for the leak while the enthusiasts are still pumping.

The subject has a very wide range, in fact, it would be difficult to encompass it with definite boundaries. The brain is a machine. It is the most complex machine that the Great Architect ever designed, because not only does it evolve motion in response to external stimuli, but it either evolves psychic phenomena or else is the medium by which psychic, spiritual

phenomena are transmitted from the unknown world. If I were giving an account to-night of the steam engine, I would have to commence with the ideas which first occurred to James Watts and then refer to the advance made by George Stephenson. From thence I should describe the very simple models gradually evolving into the exceedingly complicated mechanisms of to-day. But all along I would refer to the usefulness, the capabilities, the potentilities and the final output of these machines. I propose, therefore, to give an outline of brain machinery and structure and to dwell largely on the output. I have to search for causes that limit the output and how to combat such causes, for if we take a normal brain such as the Great Architect designed, it is in itself a most perfect machine.

The brain is made up of millions of neurons. A neuron is a technical term for a nerve system and a nerve system may be likened to a common electric house bell. There is a great similarity between electric motion and nerve motion, so much so that many neurologists used to think that nerve force was a sort of electric force. This, however, cannot be. Every kind of force is separate from every other kind, just as light is different from sound or heat. Nerve force is stimulated by electricity—or more correctly some kinds of nerves, the nerves of sensation and motion.

In the case of an electric bell, we push a button and a bell rings. When we push a button we cause a stimulus to pass along a wire to a battery cell, and this evolves an electric current or force which passes along another wire to the bell, which then rings. If we compare this with the simple act of tickling the sole of the foot we clearly see the analogy. A sensation passes from the skin of the foot to a system of nerve cells in the spinal cord, or even higher up in the brain, and a message is sent down to a group of leg muscles to withdraw the foot. The first stiumulus is called a sensation, and passes by a sensory nerve; the second stimulus is called motion and is sent down by a motor nerve.

The whole mechanism in its simplest form is called reflex action, because it can occur in sleep or without gaining any attention from the higher conscious state. Taking another example, if some dust alight in the eye the lids close quicker than thought. If consciousness came into play the lids would close so slowly that many an insect that is shut out just in the nick of time would lodge itself inside the lids.

This simple rule must be remembered, that all brain action, even thought, consists in an external stimulus, an interchange in a cell or group of cells, and a message sent out in the way of a movement of some kind or other. It also resembles the telephone. The receiver represents the sensory nerve; there is the exchange, which is sometimes simple, at other times involving calls at several offices, and finally, the third condition, the message to the person to whom we wish to speak.

We call these sensory nerves *a*fferent nerves, from the Latin prefix *ad*, meaning to; while the motor nerve is now termed the *e*fferent nerve—*e* or *ex* meaning from or out of. Thus in the act of reading the optic nerve from the eye to the brain is an afferent nerve. Nerve motion could not possibly travel from the brain to the retina. A nerve only works in one direction so far as we know. For example, when we perform the act of reading, what is received by the retina of the eye passes through two or three nerve systems (like our telephone exchanges) until it reaches the back of the brain. Here the objects seen are recorded and even stored for future use, which explains memory. By another complex system, special to the human race, the visual objects are analysed in process of thought. We call these portions of the brain the psychic and the association centres. Impulses are sent from them to bring about various forms of motion. I will explain this more fully by what I am now doing. I see the title of this lecture written before me. These simple words are flashed along from my retina to the back of my brain where there is a very complex system of records. The

message passes to a group of memories, visual memories, that is, memories of all the work I have done, what I learned as a student, and what I have learned since. With these records in activity, the muscles of speech are called into action. The visual records send messages to the word centre, so that I can put my thoughts, or visual impressions, into words. When the brain has sorted out the words it sends down messages to the motor cells which guide and control the muscles of the lips, the tongue and the windpipe. This seems very simple, but it involves many thousands of nerve fibres and nerve cells. How many would be impossible to say. Quite possibly I am now calling on ten million cells, perhaps only two millions. Who can tell?

These complex acts are not carried out by single fibres and cells laid down in line, but by groups of cells. One group receives, another group records; another group analyses; another group calls up the word centre, probably en route has to pass through the hearing centre, because all words and sounds must be recorded in both of the centres, that of hearing and that of word motion. There have therefore to be innumerable fibres and cells to link up all these systems and these we call association groups or areas. It is a very complex arrangement of systems within systems. In fact many systems in the interior of the brain have no direct communication with the outside world. It is this extremely complex arrangement of nerve systems which places us above the highest apes.

If we place some food in front of one of the lower animals, like a cow or bear, it knows that it is for eating, grabs it and eats it. A simple message passes from the eye to the back of the brain and from there to the centres of taste and hand motion to seize the food and thence to the muscles of mastication to eat it. But the more intelligent animals can go a step further. Thus the favourite dog knows when the dinner bell rings that dinner is ready and is probably the first downstairs. If dinner is late the dog may be fidgety. He is probably thinking of his plate of bones and scraps. If the dinner bell rings and you don't attend to it, he is almost certain to be very demonstrative and to insist on your getting up and going to dinner. This implies that the dog is not a machine of poor quality. He can recall several past events in connection with the family meals. This is more than memory. It implies some power of association; that is the power of combining the memories and drawing inferences. He quite understands the importance of the dinner bell. The monkeys and apes have still higher association faculties, or else they could not be taught their human-like tricks.

In man these association centres grow to a fine state of perfection. They are situated at the back and upper part of the head. Their development is the measure of intellectual growth. We have to bear in mind these important facts during the training of the child while the brain develops. Our unfortunate legislators have imagined that the minds of children were like so many empty vessels, and all that was required was to fill them. With this murderous policy they have for forty years damaged and in many cases ruined the youth of the land. [*Etc.*]

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

(1) *Anticipate the Child's Wants.* Let us provide everything that is necessary for health and interest so as to avoid both pain and restlessness. And when the child evinces a desire, the satisfaction of which involves no inconvenience, let us grant it to him: it is cruel and mischievous to refuse the child simply because he asks. Only it is necessary to show him as early as possible the right way of asking for things. Little German children are taught from a year old to join their little hands when they want anything, and they do so quite naturally (Preyer: *The Mind of the Child*), thus showing how much can be done with

children by instilling good habits. Whether we teach them to join their hands, or to make any other particular sign, let us teach our children to ask for what they want rather than to cry for it.

(2) *Prevent the child's tears.* While the child is still young, and especially so long as he indulges only in passing fits of crying, he can be distracted by having his attention directed to something else which will make him forget that he wanted to cry. "Has baby seen the black hen? Where is pussy? What did Grandma say to baby yesterday?" By questions such as these, many parents will often attract the attention of their children when they are just about to cry. "It is of the highest importance," Rosseau remarks with reason, "that the child should not perceive the intention to distract him, and that he should be amused without realising that anyone is thinking especially about him." One may also point out that this method is good for the present, but not for the future, for it does not teach the child to control his desires, a lesson he must learn gradually as he gets older.

Tears often recur in the same circumstances, at the same time and in the same place; let us avoid these circumstances and these places and try to distract our children by fresh sights.

(3) *Conquer the child's habit of crying.* However, in spite of all these precautions, the child will cry, and now comes the time when he must be checked. A child who is made happy and who, in spite of all, fills the air with his shrieks, loses his charm and innocence and all that makes him lovable. "Their crying is very often a striving for mastery and an open declaration of their insolence or obstinacy," says Locke. "What is more shocking," adds Rousseu, "more contrary to order than the sight of a self-willed and rebellious child issuing his commands to everyone round him and impertinently adopting the tone of a master with those who have only to leave him to himself to convince him of his impotence. Nature has created children to be loved and assisted, but not to be obeyed and feared?"

Now there is a way of not putting oneself into this intolerable situation. Children between the age of one and two, some earlier, some later, begin to abandon themselves to fits of crying, which they try not to stop until they have got the upper hand. The remedy is to make them give in and to get the upper hand oneself. The child wants something and asks for it. Usually you give it at once and willingly. But there comes a time when you have your reasons for refusing. Refuse point blank and let your refusal be final. Do this each time the child gives way to crying, repeat it three, four, ten, twenty times; in fact, repeat it as often as the tears re-appear. A day will at last come when the child will reason thus: "I get what I want either the first time I ask for it or not at all." Now you can be easy in your mind: henceforth he will not cry, for no one likes to take useless trouble, least of all a child.

In other words, there will inevitably come between parents and children a real struggle which takes place, as a rule, between the ages of one and two. On the result of this struggle the future depends. The period of this struggle is the most important in education, for desire will issue from it either for ever victorious or for ever under control. Every effort should be made to make this struggle as short and as salutary as may be, and to inflict as many defeats as possible on the little disturber of the peace. If the child gains a single victory, the duration of the struggle is doubled and tripled, and after all, he is the one to suffer, poor darling! Let us spare him all useless suffering; let him cry four or five times during his early years so that he may not be heard to cry ten times a day during his childhood, and suffer all his life as a result of his unbearable temper.

Again, what practical means can we use to silence the refractory child who will persist in crying? At first, when the tears begin to come, say to him, and say it again and again, firmly, "Don't cry;

you mustn't cry." Say this, while fixing him with a look and with uplifted finger, so that he may understand.

With children of a passive disposition gentler means suffice. When they cry, as they will sometimes, from mere querulousness, not from temper, they must be consoled and must be shown the affection the loss of which is the cause of their unhappiness.

(4) *The habit of being happy.* A child is naturally happy so long as he is not in pain and is interested. It therefore follows that, provided we take care always to remove the causes of pain, it is only necessary to keep the child interested and amused. The child is never unhappy when he is occupied.

Occupy the child: therein is the whole matter. How can we capture his attention? There are two ways: provide him with playthings or amuse him ourselves. These two ways must be used alternately. If we leave him always alone, we shall expose him to weariness. To set out to amuse him oneself always, is to do away with the possibility of having a moment's rest. "We should commence at the third month, as soon as the child can distinguish colours and objects we can begin to give him the means of amusing himself, and thus we shall keep him longer awake in his cradle. For instance, we can fix up, well in front of him and not above the level of his eyes, some little playthings or bits of different coloured materials. He will be delighted with them and his attention will be at once arrested. You will see him beam and smile and gurgle with delight. He will, voluntarily, often move his cradle a little so that his playthings move, too, and this adds still more to his pleasure" (Mme. Millet-Robinet and Dr. Allix).

From the age of six months the child, lying on the rug, will have around him many objects which will fully engage his attention, his eyes, and his hands. Here the great danger, especially from the time he begins to walk, is an excess of objects. Nothing tires or frets a child so much as to have too many toys. Tired of looking at them and not knowing which to choose, he breaks them up in a fit of temper, crying: "What shall I do next?" The child who, on the contrary, has few toys, likes them all the more and is happy because his imagination supplies what is lacking. It is also for this reason that the simplest toys are the best. If a doll is not dressed there is the pleasure of making its clothes; a child has sand, he can make a thousand different things, and so on with the rest. *Do not give the child too handsome toys;* leave him the pleasure of making them pretty. Do not give him *too many toys all at once,* but one only at a time.

The same rule holds good for amusement. If a child be kept amused for too long at a stretch, or nursed too long or danced about or made to laugh or crow too much, his nerves become exhausted, he is in pain, and he begins to cry. A baby once died because it was made to laugh too much: was tickled to excess by some visitors, who vied with one another in their efforts to amuse him!

Again, he gets taught to be exacting and dissatisfied. The next time he will abandon himself to his play with an excitement which it will be difficult to calm; he will continually ask: "What shall we do next?" It is impossible to please such a captious child. Let our rule then be, *to keep the child occupied, but not to fatigue him.*

Later on, about the age of a year and a half, the child wants to handle everything and monopolise everything. He is forbidden to touch one thing because it is dangerous, another because it is breakable, another because it belongs to someone else, and so on; but he is allowed to touch some things as he likes. His mind does not understand these differences, they are too complicated; he is only aware of an arbitrary prohibition. If from the beginning he is taught to distinguish what is his own from what is not his own, if he is often made to understand in regard to certain things that "this is baby's, that is father's, mother's etc.," clear ideas will enter his mind: he will

feel an instinctive respect for everything which does not belong to him, he will have no desire to touch such things, he will be happy and contented.

Thus we shall avoid the distressing sight of the spoilt child who wants everything he sees, father's watch, mother's brooch, the picture on the wall, etc.; who cries out if he is not quickly attended to, worrying both father and mother, who have to repress him in the end; who utters noisy shrieks which his parents can only stop by yielding to him, giving him what he wants, taking him up in their arms, and weakly murmuring to him, "Come, darling, what is it you are crying for?" What a humiliation and a disgrace for parents, especially before strangers, to be thus vanquished by a little torment, and it is our own fault! Let us then lay hold of the rule which will save us from this confusion and vexation—*Make the child happy, but get the upper hand* by the time he is ten months old. [*Etc.*]

Suggestions for Study and Practice.

The Father as Educator. "To be properly educated to enjoy pleasure is almost as high an educational ideal as to be properly educated to duty...It is a father's duty, one of his chief duties, to supply his children with pleasure...The father who is really willing to render his children's lives as happy as possible will not be long before he can form a rough guess as to what kinds of amusements the children take real pleasure in; and be those pleasures what they may, a little patting and pulling here and there will foster them and lead them in the right direction. To try to force a child to take pleasure in pursuits for which he has no natural inclination must fail, and may doom the child to be an all-life failure."—*Dunstan Brewer* (School Medical Inspector) on "The Father's Share in the Education of his Children," *The Parents' Review,* April, 1913.

Mental Differences between the Sexes. "As regards the mental characteristics which concern the teacher or social worker most, namely, the higher or more composite mental processes, our results harmonise with the view expressed by Professor Thorndike: 'Sex is the cause of only a small fraction of the differences between individuals; the differences of man from man and of woman from woman are as great as the differences between man and woman...We cannot therefore agree with those writers who regard the mental differences between the sexes as constitutionally inevitable, thence incapable of being eradicated or modified by social influences, such as selective breeding or traditional ideals...We incline therefore rather to that group of writers who, whether emphasising the mental differences between the sexes, or minimising them in their several theoretical generalisations, agree that in the practical issue 'the question of the future development of the intellectual life of woman is one of social necessities and ideals, rather than of the inborn psychological characteristics of sex.'"—*Cyril Burt, M.A., and Robert C. Moore, M.Sc.,* on "The Mental Differences between the Sexes," in *The Journal of Experimental Pedagogy,* December, 1912.

Needlework and Eyesight. "The children at age 5 apparently start school with the boys and girls having much the same number of defects, the advantage being with the girls, the figure being .93 per cent. lower. But when the age 12 group is examined there will be found a marked difference, the girls having much higher defects than the boys, the increase being in defects of myopia, myopic astigmatism and mixed astigmatism. These children are all under the same home conditions, and the same conditions at school of lighting, ventilation, etc., with the exception of needlework...From the above figures it would seem to suggest that sewing should not be done in the infant rooms, and might well be postponed until the child reaches a later age, such as eight. Children learn to sew very quickly at this age, and by the time they reach the age

of twelve they most probably would sew as well as if they had begun one or two years younger."—*Agnes A. Parson, M.B., B.S., D.P.H.*, "Report on the Possible Effect of Needlework on the Eyes of Young Children," in *School Hygiene*, February, 1913.

The Child Study Society and the Constituent Societies.

The Dundee Society met on March 5th. Mr. C. W. Valentine, M.A., Lecturer in Experimental Psychology, Dundee Training College, described a series of experiments which he had carried out in Dundee schools with a view to discovering the comparative value of the Phonic and the "Look-and-Say" methods of teaching reading. Five classes of children, varying in age from six to nine years, were each divided into two sections of approximately equal average intelligence. One section of each class was taught to read English words written in Greek script, by the Phonic method, the other section being taught by the Look-and-Say method. Subsequent reading tests showed that, on the whole, the Phonic method had proved much superior, though among the least intelligent children the two methods gave about the same results.—*Mr. R. Jackson.*

The Hartlepools Society.—The above-named Society is in a larval state, and will not emerge as a fully-developed society until September next. Meanwhile it will be feeding voraciously on the best of food. Dr. P. Sandiford has consented to give a lecture on *The Inheritance of Mental and Physical Traits* on May 1st, and Miss Marie Shedloch will give one of her lectures on *Story Telling* on June 11th.—*Mr. Arnold T. Prentice.*

The London Society.—Mr. Frank Roscoe, M.A., Secretary Teachers' Registration Council, very kindly took Professor Green's place on April 17th, and gave the lecture on *The Backward Child in the Ordinary School.* There was a very good attendance, and the society is especially indebted to Mr. Roscoe for undertaking the lecture at very short notice.

The summer visit will take place on Saturday, June 7th. Dr. and Mrs. Kimmins have been good enough to invite the members of the Society to visit the Heritage Schools of Arts and Crafts, for crippled boys and girls, at Chorley, Sussex. Members are asked to keep this date free for the excursion.

The Tunbridge Wells Society.—On April 1st three papers were read on *Imagination and Day Dreaming.* Lady Matthews took the parents' point of view: how we may use the day dreams of childhood. Knowing how the pure imagination of childhood springs from a fine sense of the great unseen and acknowledges the domination of good, we have an immense responsibility to train aright and direct these aspirations till they become part of the whole life. The day dreams of the children should be made to irradiate the days when practical matter seems to choke the spiritual side.

Mrs. G. E. Watson showed how imagination appears in children. Though it may sometimes fill them with dread, the joy and hope it brings far outweigh the fears. It is the inspiration of their games. It does not take away from a child's practical abilities, but rather adds to them. It is perhaps one of their greatest blessings.

Dr. Campbell Smith said that the fanciful imaginations of young children arise from the fewness of their perceptions. A child has fewer previous sensations with which it can compare the present sensation, consequently the sight of a new object, or any other sensation, causes fewer perceptions in a child and the object is less clearly perceived. Also the vividness with which perception seizes on a child's mind is due to the fewness of other perceptions. Dr. Campbell Smith pointed out the difference between the fanciful imagination of which Lady Matthews had spoken and the pernicious habit of day dreaming, that imaginative state that has no outward expression and renders the dreamer more and more self-involved. Its sensations tend to fritter themselves away in emotional states, the child is thrown back on itself, fails to develop its keenness of perception and grows self-centred and egotistic. The dreamer becomes unfitted to face the difficulties of life. Such imagination differs from that which shows itself in play. The latter calls forth close observation and activity; day dreaming tends to do away with these. It also differs from the imagination which shows itself in the love of stories. In listening to stories the child is taken out of itself. He is not the hero of the tale. The passivity of listening to stories may become injurious if carried too far. The acting out of stories is an excellent thing. By careful watching it is possible to find out the nature of the child's dreams: if they are egotistical and self-glorifying or of a higher nature. The doctor was of opinion that no effort should be spared to eradicate the pernicious habit of day dreaming.—*Miss G. Edwards.*

Correspondence.

Dear Sir,—With reference to the challenge to the London Teachers' Association on the front page of "Child-Study" for March, may I be permitted to say this on behalf of that Association? While it is true that the L.T.A. has taken no steps towards the establishment of a School of Psychology, much of the work done by the Association has very definite psychological bearings. It has, through the mouths of its many lecturers,

including, sir, yourself, and the columns of its weekly journal, given its members very seriously to think upon the matter, and not to think only. There are those who have not stopped at the thinking, but have set themselves to do. If, by the influences of their own Association, members have been induced thus far, surely the way is well prepared for further development. The activities of such an Association are many and diverse, so that it is not possible to compass such an end as the establishment of a School of Psychology in a limited space of time.

The Association's work in this direction can, and no doubt will, be extended, and will doubtless assume a more definite shape. Indeed its extension has already begun. During the past session three courses of lectures in Handwork as applied to class-teaching were organised. Similar courses have been arranged for the next session, as also has a series of lectures in psychology. Without any fantastic extension of the meaning of words, I would suggest that the Association's educational lectures, its courses for teachers, its conferences and discussions, the papers and memoranda published in "The London Teacher," constitute a very useful advance towards the end you would desire.—Yours faithfully,

FRANCES JORDAN.

Notices and News.

Some Corrections were omitted in our April number, which we regret, and now give them. In Dr. Brown's article on *The Psychology of Mathematics*, the formula on page 45 should be:

$$r = \frac{S(xy)}{N \sigma_1 \sigma_2};$$

the formula on page 46 should be:

$$\rho = 1 - \frac{6\,S(d^2)}{N(N^2-1)}, \text{ and } r = 2 \sin\left(\frac{\pi}{6}\rho\right);$$

and that on page 47 should be:

$$r_{12.3} = \frac{r_{12} - r_{13}\, r_{23}}{\sqrt{(1-r_{13}^2)(1-r_{23}^2)}}$$

On page 44, column one, line six, for "Strimpell" read *Strümpell*; and column two, line 11, for "Studren B.A." read *Studien Bd*; and on page 47, column one, line 25, for "connecting" read *connection*.

In Dr. Boyd's article on *The Beginnings of Syntactical Speech* on page 50, column two, line 37, for "time" read *place*.

Reviews.

L'Educateur Moderne. Oct. 12th to April 13th. Paulin et Cie, Paris.

With two articles by Mons. C. Hemon in the October and November issues upon some "Researches into the beginnings of numeration with young children," and one in February by M. Galanine on the teaching of arithmetic, we hope to deal more fully later, in conjunction with some work on similar lines done by Mlle. Degand; meanwhile they would well repay perusal by those interested. To the first two numbers also M. Peeters contributed an exposition and warm defence of Rousseau and his Emile; in December and January appeared two articles by M. Leclerc, upon the "Education of the Will," where the subject is treated with much philosophy and thoroughness from early days to the close of adolescence, and if the author is indebted to others for many of his ideas—he acknowledges Binet, Compayré, Claparéde and Hall—he has his own also, and his own way of formulating them. In addition to his "pedagogic reflexions," M. Cousinet gave three articles in December, February and April on "Æsthetic Education in Primary Schools," to which he was moved by the apparent lowering of taste both on part of general public and of the workers, and its possible disastrous social effects. But perhaps from the point of view of child-study, the most interesting article of all is one by M. O. Frappier in the April issue upon the testimony of children, a careful piece of work that serves to show the kind of detail that usually escapes the observation of children, and also that reports made without questions, whilst containing fewer facts, are much more likely to be veracious than those obtained in reply to questions, which cannot fail to be full of suggestion.

Bulletin de l'Education morale de la Jeunesse.

This little publication is indicative of the efforts being made in France to improve moral education through parents rather than through schools. We find questions upon child control and training asked by mothers and answered at length in later issues, and of meetings of mothers anxious to discuss the right training of their children. Naturally also Mdme. Montessori and her methods receive much attention, mainly from the moral side; whilst the general characters of children from birth to three years and three to seven years, moral experience, and the necessity of obedience, are all considered.

Hygiene for Teachers. By R. ALAN ROWLANDS, B.Sc., M.R.C.S., L.R.C.P. Pp. x., 356. Edward Arnold. 4/6 net.

This book is intended for students in training colleges, and is a good example of its kind.

The Conservation of the Child. By ARTHUR HOLMES, Ph.D. Pp. 345. J. B. Lippincott Company. 4/6 net.

An important and valuable book on the psychological clinic. It will be further reviewed.

Child-Study.

The Journal of the Child-Study Society.

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The Development of the Child's Brain. II.

By Albert Wilson, M.D.

The great art of education is to let ideas pass slowly into the developing sensory centres. Let them take root slowly and develop associations. The more associations that are stimulated and impressed the firmer and clearer the memory. Let us again take the simple word orange. I cannot say exactly what the Board of Education thinks of an orange to-day, but formerly it was a mere fruit. A parrot like memory of where the oranges came from is not likely to last long. The developing brain requires the stimulus of knowledge, and the more stimuli the more the intellect develops. Tell the developing child all about the orange. Stimulate the visual centre with the shape and colour of the fruit. Liken the shape to the earth's surface and you lay the seeds for astonomical knowledge. Teach it about the acid taste and contrast it with alkali, sourness with sweetness. This opens another association leading into chemistry. Then as to its nature as a plant there is much to learn in its botanical structure and growth. When we teach the child where it comes from we not only construct a picture of the country but of the world. We open up ideas as to temperature, climate and its causation—soil and the earth structure. An orange then is capable of innumerable associations all bearing on natural sciences and all cultivating the faculty of observation and associaton of ideas. This is education. The former Government method is instruction.

In youth memory is stocked with concrete terms, as names of people and places which are difficult to retain because there are so few associations by which to exert a multiple hold on them. John Smith as a simple name, associated only with some acquaintanceship, has but little attachment to the brain machine as compared with the term orange. It therefore is more readily forgotten than the broader term orange with its many associations. John Smith is retained in the brain centre devoted to the memory of words. His facial appearance is probably more securely retained in the centre of sight. At least experience demonstrates this. Thus after years interval we meet John Smith, and our visual centre recalls him clearly as one whom we have known; but how to remember his name is a difficulty. The visual centre may be unable to call up the name in the memory centre. Too often there is no response. Word memory is a difficult thing in the human family, probably because it and the power of speech, which two are closely associated, are the highest functions added to the hypothetical ape-man to make him into superman, or homo sapiens. The higher and latest evolved faculties must necessarily be the weakest. It is therefore necessary in children to cultivate memory—not like a parrot but by as many as possible associating ideas. Where concrete terms have to be remembered, the old-fashioned method of introducing them into musical rhymes was excellent. To forget the term broke up the rhyme, which was sufficiently striking to be retained as a whole. In addition the tune was stamped on the hearing centre, while both made attachments to the speech centre.

Education commences from early infancy in very small doses, of course, but

always by showing the child some simple object and associating it with something else.

Motion is the very essence of our being, so much so that Bergson has to some extent translated the idea of the soul into constant progressive motion. Of course, wherever there is change there is motion. The infant enjoys being rocked or jumped and the adult of to-day is most happy when whirled along in a motor car or an aeroplane. All forms of motion should be encouraged. There is no more hopeful sign than the restless activity which some infants show. It is due to the process of development in the motor centres of the brain, which occupy a larger portion of the brain than any other function. These centres lie in the middle and forepart of the brain and we observe that athletes are usually broad-headed. Every child, and later boys and young men should be encouraged to all forms of exercise with a view to brain development.

Speech is a form of motion, and it is thought that whenever a letter is pronounced or thought of, that there is a stimulus to the motor centre, shaping out that letter. Thus the simple letter O when mentioned caused a rotation of the eye-balls as if outlining the letter, and the same probably occurs in the formations of other more complex letters. Again, if we talk of a square, a triangle, a curve or even a straight line the eye follows or outlines the shape of that figure in response to a call or message from a nerve cell in the visual centre. We can realise this for simple figures. It shows what an important thing motion is in education. To restate this, let us suppose a circle to be recorded by the eye in the sight centre of the brain. Some one utters the word circle. The sound centre telegraphs a message to the particular cell group in the visual centre, which sends a message to the motor centre and the eyeballs perform the particularly rotatory motion of that figure. If we are supposed to repeat the word, a message is sent on to the speech centre. It is therefore most important for teachers to realise this interlocking of brain centres and always to bring in movements when possible. This is, I believe, the basis of the Montessori system. Rhyme and rhythm indicate the association of the hearing centre with the motor centre of speech. The hearing centre is important to us, but we are essentially seeing animals. We have lost smell through civilisation, and we are losing the sense of touch through the advance of scientific measurements.

When the infant is born it appears to have a brain well equipped with active brain cells. It, however, contains everywhere undeveloped nuclei ready to bud forth into mature neurons. These cells demand favourable environment and proper nutrition in order to facilitate that development. The cells in the deeper layers are more perfect than those of the outer layers. The reason is that they are older in time. On the extreme outside of the grey cell layer there is a band of undeveloped nuclei; there are about six to ten layers of such cells. These are seen so far as I know in every newborn child. We may term this the postnatal layer of embryonic nuclei. That is the layer for future development during chlidhood. All the beautiful cells already developed, prepared for their various functions, have been laid down *in utero* and may be said to represent the race—the human race. These prenatal cells are deeper, and more numerous than we find even in a highly developed chinpanzee or gorilla.

This undeveloped layer stands for the individual. If this layer develops well we have a normal being.

If anything occurs to arrest their development we have an individual of poor quality, who may be mentally deficient, degenerate or even an imbecile. This outer thin undeveloped layer stands for the higher intelligence, while the lower and larger part stands for instincts and probably for the lower mentation, such as automatic actions, intuitive thought, and for those processes which are the more necessary for our protection.

This thin layer of nuclei, undeveloped at birth, is clearly the portion of the brain which we educate in childhood. Its development merits the highest consideration. In old age it is the first part to fall out of repair and in fact to disappear. In alcoholism and some forms of insanity it is the earliest to be attacked. Bearing in mind this reserve of undeveloped nerve cells, it behoves us to study methods of education with great care in order to bring the child up to the highest level. The work of the Board of Education was for more than thirty years of the most destructive character. It is responsible for a large amount, if not the greater portion of the present mental feebleness; not to speak of the crime which has resulted from destroying the intelligence of the poor. They crammed their brains, many of them weak, starved and diseased with useless facts. We all know what exhaustion follows after a hard day of mental work. The same exhaustion overtakes these poor children after so many hours at school. We who live in favourable surroundings can regain our strength more easily than this class of children. I am thankful to know that the Board of Education is made of better material to-day, and that it is largely under the control of a medical adviser who by reason of his Quaker pedigree and upbringing, stands for sensible reform and intelligent methods. I allude to Sir George Newman, M.D., who has established a thorough medical inspection of all school children. I trust that in the near future parents will be compelled to have the children cleared of adenoids, enlarged tonsils and bad teeth. The medical attention so applied should do a great deal for brain development. The non-aeration of the blood from adenoids, and the sepsis and poisonous effects of bad teeth and enlarged tonsils are formidable factors in arresting the progress of development.

From what has been said it is quite evident that the whole success in life depends upon the natural development of the child's brain. There are two risks. First to the child before birth, when the racial cells, peculiar to the genus homo, are forming. If these are damaged at this stage the child is abnormal from the first, approaching imbecility.

Secondly there is the risk after birth when these outer nuclei are developing; and the outer portion of the brain represents the individual and the family to which he belongs...

So far in treating this subject—the Development of the Brain in the Child—I have only spoken of environment. Environment commences at the date of conception. It is of especial importance before birth as well as during at least the first five years. Anything in the nature of tubercle or syphilis comes under the heading of infection *in utero,* and is therefore environmental. We call this congenital. Till recently many writers were confused in this matter and spoke of hereditary or inherited tubercle, consumption or syphilis.

Heredity is the great factor in the race. What it is or where it comes from no one knows. We might say of heredity what the Master said of the wind—that it bloweth where it listeth, but man knoweth not whence it cometh or whither it goeth.

Heredtiy is an invisible force which cannot be bought—nor yet can it be wooed. Heredity is the determining factor of the individual, the race and the nation.

It is behind every neuron and every microscopic nucleus of our nerve cells. Its invisible properties, whether molecules or wave lengths defies both alchemy and physics. And yet there must surely be a physical representation of heredity. I have already mentioned that a German investigator has recently discovered that the blood of the female during pregnancy contains a ferment which does not exist in her blood at any other time. Is it then not possible that heredity may be associated with some bio-chemical agent; perhaps some type of ferment. Certain stable families are able to conserve this ferment and thus exhibit all the higher

physical qualities which go to make up what is popularly termed breed. But I am anticipating science by perhaps a decade or even more.

As we know heredity, it is a force which distinguishes characters, both physical, mental and moral, and it runs in families. It is not associated with wealth nor can it be nurtured by wealth. Where it exists it is fostered by marriage on normal lines; that is marriage on the same level—the level of breed.

As no amount of wealth can make heredity, no amount of hardship can destroy it. Heredity does not coy with what we term the aristocracy alone. We find good heredity in many thousands of families who have never worn a coronet. A good heredity seems to be the outcome of healthy marriage amongst normal, stable individuals. Where this occurs low down in the social scale, not far removed from the poverty zone, we speak of such as "Nature's gentleman."

The subject has been studied among horses, sheep, cows, pigs, poultry, pigeons, plants and so on. The law to keep up breed is the law of artificial selection, which means breeding from animals or plants which conform to a certain standard in certain points and casting out or destroying the bad specimens. Once breed from a bad specimen and the whole stock is diluted and goes wrong. So it is in the human race. Good families throw off bad specimens here and there. It may be caused by an accident before birth, an illness, a taint, or a debauch. That branch of the family, which follows the bad specimen, degenerates and the breed is lost. Hence the great importance of selective marriage.

In Nature Darwin discovered the grand principle which underlies the whole—the principle of Natural selection. By this means only the fit survive. The weaker succumb to their enemies. There is thus in nature a constant warfare to wipe out the unfit. Would that such a principle could be applied in our large cities today!

Observation tends to show that heredity has more to do with the development of the child's brain than environment. In the language of some writers: Nature plays a greater part than nurture. At the same time the value of nurture cannot be too strongly emphasised. Unfortunately the greater portion of the race have a poor heredity. This is contrary to Nature, because in Nature if a race weakens it is wiped out by circumstances, perhaps by special enemies. I am afraid our profession is doing no service to eugenics in fostering the weak.

The causes of degeneracy are chiefly the brain toxins—syphilis and tubercle, then follow poverty adding to the effects of these two, and finally intermarriage and excessive child bearing. The part of the organism that suffers most is the brain—the brain in childhood; and it is in childhood that we make the ne'er-do-well, the criminal and even the murderer. It is evident, then, that these people are not a kind of variation from the normal, nor yet sports, using the term in the botanical sense. They are degenerates from the normal type and they should not be encouraged to multiply. We may get sports among the lower people. That is to say in a working class family a child appears with wonderful brain development. He rises in later life to some exalted position in science, or commerce, or politics. We usually observe that his children fall back to the level from which he sprang. Generally speaking, these people lack stability. They lack heredity in support of the brain development. The brain machine will not run in good working order to 70 or 80. However brilliant it may be, it usually breaks long before sixty, or perhaps the whole organism collapses or is short lived.

For example, an employer asked me to see his manager, who had no special disease but was literally going to pieces about the age of 50. The cause was evident. His father was a successful carman, an employer. This individual's brain was constructed or tuned to the lower kind of occupation. He had not the stability to carry him through the

duties of managing a large business. It was too complex for his brain cells. He did it well for a time but actually died under the strain at this early age.

In our dealing with children and young persons we should realise the importance of considering what each child can attain to. Don't let us force the pace in education for the sake of results and don't let us try to place the children too high up in the social or business world.

In another case a board school boy was selected because of his brilliancy and placed in a good business firm. He rose to be manager, and the results were excellent till he was 40 or 45. Then he broke. His brain had not the stability of heredity to support it. He first failed on the moral plane—business integrity. Then in will power—alcoholism. The end was a tragedy.

As we read the obituary notices of successful men who have risen, and die in early or middle life, we can clearly see the reason. It is a question of durability and that is a matter of heredity.

It is important to remember that what is called heredity or breed may occur unexpectedly in any family as a sport. Were not such men as Benjamin Franklin and George Stephenson superior to any of their kin? How these come about is a little mysterious, but certain molecules in the germ plasm, which Weissman calls "ids" or determinants, which are favourable to each other may meet at unexpected times and thus produce a normal being. As we can never say for certain how a child will turn out, it behoves us to do the best for its development. This is proved in such institutions as Dr. Barnardo's Home, where the percentage of successes is very high. Such success is a very strong argument in favour of environment as opposed to what I am urging, the plea for heredity. But there is the other side, that in every child, however low down, there may be some molecules or "ids" or determinants of good pedigree, which only require fostering in order to develop.

After all, what is heredity or breed? Is it a limited dole to what is called the aristocracy? Certainly not. It has distinctive attributes to be attained by any class where careful selective marriage occurs.

It implies longevity and stability, and as an adjunct of the latter self-control. Self-control implies that higher morale and courage which form a superstructure on intellect. It also implies the power to serve and the power to govern. When our population was small, men possessed of these qualities asserted themselves above the masses. Where careful marriage has occurred the pedigree is good to-day, and vice versa. The Quakers or Society of Friends represent a well selected group. They were stable in the first instance and kept so by selective marriage. But too much intermarriage tended to weakness and insanity among them. On the other hand marriage outside the Society has tended to lower the quality. Here, again, we have an object lesson in brain development, as for forty years they have been absorbing good specimens of the working classes, and now the children of this poorer class are turning out very well, showing some of the higher qualities which go to make up breed.

We cannot omit the subject of Pedigree or Breed in considering each individual, in order to give it every chance of brain development and raise it to as high a level as possible.

Let us suppose that the elusive quality Breed or Heredity is a physical quantity represented by the letter H. If, then, there is a person of good heredity he contains two portions of heredity, one from the father which we call FH, and one from the mother which we call MH. So long as he marries on the same plane all the children will contain two portions of heredity FH and MH. But suppose a son marry a girl who possesses no breed or heredity then the children only have one portion FH. In this way H may be diluted at each fresh generation till the offspring are of such poor quality that we call them mongrels. But just as we may

dilute or destroy H—the quantity of heredity—so by careful marriage among normals we may reaccumulate it. Supposing two persons married who had one-eighth each of H, then the children would be better than their parents and each have one quarter of H. This is in truth what we observe daily and what we must endeavour to cultivate for the sake of the offspring.

Let us take another case where a man is blessed with two portions of H, one from each parent. Supposing he is led astray and develops alcoholism or contracts syphilis, his brain is so poisoned that his fine inherited qualities are destroyed and it is uncertain whether they can be transmitted. Probably he transmits less and so his children are poorer in quality than himself.

I wish now to place before you a curious biological problem—Can a human degenerate or even imbecile produce normal children? The biologist says Yes. The physician says No. Which is the case? Observation supports the physician in most cases, but I have in mind a feeble-minded boy, in fact a degenerate but not a wicked youth, who at the age of 19 married a very nice girl of the same age. At the age of 22 he was the father of three children. One appears of very good intelligence and the other two are certainly on a higher level than the father. But listen to the biologist's theory. When the fertilised ovum develops it divides and subdivides into a mass of smaller cells. At a very early stage this mass separates into two groups which never combine again.

One group is called the somatic group, because they build up the soma or body; while the other group forms the germinal cells which carry on the race. The somatic group, in reality the body, enclose or cover over the germinal group which form the organs of generation. For instance, in the case of the hen. The hen is a covering for the egg. Beyond that the hen has but a little to do with the egg. The egg forming organs derive nourishment and protection from the hen, but nothing that the hen does will influence the egg. This fact is used by biologists who say that alcohol makes no difference to the offspring. But we know that alcohol affects the blood which flows to the generative organs and starves the elements from which the ova spring. Syphilis and tubercle act by direct infection after conception.

We see from this that feeble-mindedness is a purely somatic condition and as it is quite apart from the germinal cells why should these germinal cells be affected? Why should they transmit what is really an acquired condition? It is quite possible that the explanation of feeble-mindedness consists in some taint, which taint causes an impaired brain development in succeeding generations. Or it may be that this elusive property H, or heredity, as it gets more and more diluted, results in brain development, for after all the finest gift of heredity is a healthy brain.

What I wish to emphasise is that the development of the brain is the keynote of the present life, and if so we may suppose of the great hereafter. Brain development is not to be measured by school learning or intellectual smartness. It includes much more, stability of character and morale.

We have to aim at the best output possible, and while nourishment and environment demand the closest attention the main factor is heredity. Heredity implies stability, in fact stability is one of the routes to heredity. To gain that we must not only have careful mating but we must avoid maternal exhaustion.

We can only work as individuals, each in our own small circle, but though we are often discouraged, let us not despair but take heart. If we all plod on working on the same lines, the world will benefit. Every unborn child from an exhausted mother, who has been saved an entré and miserable existence is a cause for thankfulness. While every child who has been carefully thought out before its entré, and cared for after its arrival must give the guardian of that family or child

a joy which comes like a ray of light and hope as we look over the darkness of our present social misery.

What we want is quality. At present the quantity overwhelms us.

The Teaching of Sexual Hygiene.

By Norah March, B.Sc.

Assuming that the responsibility of sex enlightenment will be left to the school, the question arises, "How is it to be done?" I will show first of all how the school may become the agent for sex-instruction, for it is in the school that we have opportunity of systematic teaching; but it must not be thought that parental effort is depreciated; rather would I urge that parents proceed along the same lines, looking at the subject from the same point of view, and adding to the weight thereof the whole bias of good parental influence.

There are certain essential conditions which successful teaching should seek to fulfil, and keeping these, together with the trinity of aspect—moral, physical, and spiritual—in view, a scheme may be formulated. (1) It should give the sex organs and functions a normal, unaccentuated place in life. (2) In order to do this, the customary obscurity in which the child's search for knowledge is conducted should be illuminated; the subject of sex should be dealt with in a dignified way, openly, purely, definitely and clearly. (3) Instruction in sex hygiene and physiology should follow naturally and logically. (4) The ethical obligations of the sex life should be developed and, reasons for moral conduct in sex being supplied, brought into intimate relation with the child's conception of personal responsibility. (5) The course of instruction should form adequate approach to preparation for parenthood. (6) Throughout, the spiritual beauty of the sex ideal should be inculcated.

Now, as to the fulfilling of these conditions and aims. If the child comes to school already equipped with pure knowledge of the transmission of human life, the task of the school is to supplement and re-inforce the knowledge, bringing to such performance all the advantages of pedagogical methods, and a complete course may be suggested which would do this, at the same time, would inform those who are ignorant and reform the information of those who have gained it from impure sources. To this class belong the vast majority of children attending the elementary schools, many of whom live in environment of limitation and degradation and whose only hope of uplift lies in the hands of the elementary school teacher.

To achieve this threefold aim it will be necessary to begin in the early years of the child's life, to lay a foundation, and by means of a nature study course beginning in the early years of childhood, introduce the child to the processes of fertilisation and to some extent to its results. It has to be clearly realised that the majority of children (as Dr. Stanley Hall and his pupils have shown) first ask questions evincing their curiosity as to the origin of babies, between the ages of three years and seven years. The usual custom is to evade these questions or answer them by myth or fairy tale, which, in a short time, if not immediately, the child tacitly discards and seeks information elsewhere. Now, it must be remembered that when a young child asks a question as to where it came from (or similar question bearing on the origin of life) it is *not* asking a question of sexual import. It is merely showing the awakening of the innate curiosity about birth to which it has the right to receive a direct, true reply, given, of course, in a measure to its understanding.

To indicate how nature study may be made to serve, it is possible to arrange a sequence of types such as shall prepare a background for reference by which human reproduction may be explained. Such types may be dealt with on the best lines of teaching, by first-hand observation and in simple terms. The study of large flowers with the reproductive organs clearly shown, reveals to the child where the baby plants come from and how they

are made. And observation of germinating seeds shows how the baby plants grow up. Simple terms, such as " pollen-box," " seed-box," are quite sufficient. " Each little egg in the seed-box can only grow into a seed if it joins to a little ' pollen-grain ' (or sperm)." It is an interesting thing to observe that very young children assimilate the fundamentals of the reproductive processes in plants very easily indeed.

The idea of sex may be brought out by the study of conspicuous unisexual flowers, using the terms " father plant " and " mother plant," and in this connection the terms " male," " female," " sperm " and " egg " should be introduced into the vocabulary of the child. They are, after all, simple monosyllabic words and present no difficulty. The agency of the wind and insects in effecting fertilization is coincidently observed.

The study of animal life reveals the evolution of sex, and types may be selected showing various grades of elaboration in the reproductive processes. It is not desirable to lay down autocratic lines for the making of this selection, which should, of course, largely depend upon types available in the environment. But types may be selected and dealt with in such a way that there is a gradual sequence of acquaintance culminating in the mammal, and what applies to the mammal biologically applies to man.

During such a course, questions on human babies may have arisen, and should be answered just as naturally as asked, without going into the then unnecessary details, *e.g.*, in the early years it is sufficient to say that all young things come from their mothers, and that a baby girl or boy grows within its mother's body, where she takes care of it till it is strong enough to come into the world, just as the baby nut grows inside of the hazel cup, and is taken care of by the mother hazel plant. Then continued study of other types is preparing the way for the revelation of human reproduction, which, after such a sequence of acquaintance, comes without any hiatus or shock.

Throughout the nature work, reproduction should receive no special emphasis, but should merely be regarded as systematically as are movement, nutrition, family life: in short, all the phases of plant and animal life. Tactful and æsthetic treatment of subject will bring out the relation of sex to beauty, care of offspring, including pre-natal life, eggs and their development, home-building, care of reproductive organs, provision of food for offspring, enlargement of maternal form, principles of heredity, etc. Such a scheme infiltrating the nature study course of a school (which course would give plenty of scope for revision by consideration of allied types) might attain comprehension of the fundamentals of human reproduction by the time the pupils are, say, from eight to ten years of age.

Nature study on similar lines, extending acquaintance with plant and animal life, would continue to receive a place in the curriculum and later be augmented by or substituted by physiology and hygiene, according as time permitted. At the age of thirteen or fourteen, girls and boys are just realising the fact that education has its direct value to after-school life, and it is the age at which physiology and hygiene are appreciated.

Physiology and Hygiene. These subjects already find a place in the curriculum of many schools, but as usually treated, they do not deal with the physiology and hygiene of sex. Now, I do not wish it to be thought that it is advisable to give special attention to the reproductive organs in physiology and hygiene classes. All that is necessary is to dismiss the old policy of ignoring the existence of generative organs, and to give them due, systematic treatment merely according them a measure of attention such as is given to the other systems of the body. And in special, may it be suggested that the internal organs receive more consideration than the external ones. The nervous system and its interrelation with the other body systems, is of important issue from our point of view (instruction in sexual hygiene), and care

should be taken to reveal how dependent the health of the individual is upon the harmonious working of the body systems, and how particularly important is the reaction between, *e.g.*, the digestive system and the nervous system; the reproductive system and the nervous system.

A word in connection with physiological diagrams. Conventionalised drawings sketched in black and white, as required to illustrate points, will be sufficient to elucidate instruction.

In connection with hygiene, the prevalence of gonococcus infection and of syphilis, together with a better understanding of the terrible results of their activity, have largely contributed to the increase of demand for instruction of the young in sex hygiene. They are frequently spoken of as the "venereal" diseases, the "shameful" diseases; yet we know that they may be contracted without any sexual irregularities, in ways which inflict no stigma upon the innocent sufferer. Dr. Helen Putnam appeals for the term "social diseases" being adopted in the hygiene course, and being used to include tuberculosis, typhus, syphilis and gonococcus infection: in short, all those diseases the spread of which depends upon our social practices.

It is not part of my scheme to suggest that an attempt to restrain boys and girls should be made by the induction of fear, by such enlightenment of the evil results and the prevalence of these special diseases as shall frighten them into moral conduct, for such a way of attaining the aim we hope to accomplish would be lowering to the aim and to the resultant moral factor in character-building. An exalted ideal of the sex life will establish a firm basis of self-respect, and create a definite contributory factor to moral integrity in the sex life.

So that while suggesting the incorporation of gonococcus infection and syphilis in the list of social diseases for treatment in the school course of hygiene, I also suggest that they be given that measure and method of treatment which shall serve to inform pupils of their existence and the effect on the race, in the same way as we deal with tuberculosis, so that the result will be, while not inculcating the restraint of fear, to educate opinion along lines which shall lead to demand for reform. Herein lies the trend of citizenship. Nature study and biology may be made to form a perfectly adequate approach to the study of transmissible and infectious disease.

Ethics. To turn to another aspect of the question. Mere biological training is insufficient to fulfil the high aim. Instruction in hygiene added, still leaves it incomplete. Sexual hygiene is not merely an affair of the body; it is also an affair of the mind: so the ethical, spiritual and emotional aspects demand our consideration. Without a sound moral foundation, sex instruction will be inadequate. Yet I have dealt with the biological side first, because it is essential that a knowledge of physical facts must form a basis for moral conduct. Moreover, the expanded outlook gained by intimate knowledge of the processes of nature, has an automatic response in character formation; its contributory value is great. More than that, I venture to think that nature study and biology, taught by a tactful, inspired teacher, will already have achieved, *indirectly*, a certain amount of moral training, and prepares the way by providing analogies (the young mind is very receptive of explanation by analogy) for direct reference to the ethical considerations in the sex life.

Dr. Fœrster, a recent writer on this question, though he apparently discredits the equal value of biological with moral training, is rightly emphatic upon the importance of making clear the difference, so far as reproduction is concerned, between animals and man (that while animal life is governed by the sex-impulse, that same impulse is under the responsible control of man), and to this end advocates the training of the will, inculcation of self-denial, self-discipline by self-conquest.

The spirit of altruism is called into play when the claim of the race calls for sacrifice of the desires of the individual; and

perhaps a word may be mentioned here, in connection with the training of girls. The love of power, the desire to fascinate may often lead a girl to their gratification at the expense of masculine feelings, and often at considerable test to masculine moral restraint. The inculcation of the altruistic spirit will find its justification when girls are led to understand something of the nature of the masculine side of the question and to realise that a woman may do untold harm by apparently harmless lines of conduct. An understanding, too, of the changes through which a boy is passing when his voice begins to break will lead to kindness on the part of his sister, rather than the teasing he so often receives. So also a boy's respect for and consideration for girls and women may be re-inforced by a sympathetic understanding of womanhood.

Throughout our efforts at sex-education for girls and boys the dignity and privilege of motherhood should permeate, developing in its train a high ideal of fatherhood to guide unconsciously a girl in her choice of the father of her children and a boy in his choice of wife. A high conception of woman's function will necessarily lead to intense self-respect and supply a *positive motive* for moral integrity in the sex life of both boys and girls which would far outrun any efforts at establishing restraint through the negative method, the "cultivation of the sense of shame."

The scientific side of sex-education is, it will be seen, of great importance, essentially from the point of view of the establishment of physical facts. But it must not be thought that our efforts will by any means find their ultimate expression here. The achievement of our aim calls for every educational subject to contribute its share. Such religious training as our schools afford ought to be brought to bear upon the sex life, to strengthen and uplift; every help it can supply should be extracted, not ignored, as it has hitherto, most generally been.

The value of literature towards the sex life is very considerable. Some German teachers, we are told, have a carefully-selected course of love stories for boys and girls, which are used for the purpose of bringing out the highest and most chivalrous side of passion at an age when the pupil is most susceptible of its idealisation. Perhaps the compilation of a list of books in this way might tend to over-emphasis; however, the teacher of literature may so utilise and select his subject-matter as to explain those aspects which the biologist touches upon but little. Professor Earl Barnes points out how important it is that, in our work of constructing a scheme of sex-education, we should not ignore the pleasures of sex. Some guidance is essential and here the teacher of literature can step in and show how grievous, how harmful to others, desire for pleasure, in its gratification may be.

The subject of literature in relation to sex-education is wide. I must leave it to your own research to find the many opportunities it affords of placing a high ideal before boys and girls, of helping them to an understanding of social experience, in addition to the benefit they derive from intellectual culture and the infusion of high ideals such as comes to the adolescent steeped in the study of our masterpieces of literature, both in poetry and prose.

To indicate briefly how other school subjects lend a hand. History and geography taught on the broad lines of training for citizenship give width of horizon; knowledge of social ill-health and its evil effects, with this extended survey which consideration of civics gives, would lead to widespread demand for reform: that is the patriotic aspect of parenthood. Domestic training, both hygienic and practical, in the school curriculum, besides tending to improve nurtural conditions, raises the dignity of domestic labour, and would in this way be one of the factors tending to a revision of the status of the wife (which revision more especially in the lower classes is so badly needed).

Athletics, gardening, physical culture, hobbies, social endeavour, all have their

part to play in maintaining a healthy balance, and in distracting attention from the sex-life and its manifestations, for, in sex-instruction, the aim is, while giving definite information, to prevent intensification of the sex-emotions, to distract attention from the intimate sex experiences and so to delay the climax of adolescence.

Preparation for parenthood should be extended further by instruction in mothercraft (including child-bearing, which in elementary outline should be conveyed to both boys and girls before they pass beyond the direct school influence). In elementary schools the leaving age is a critical age in the sex-life, but it normally represents the last chance the school has of exerting direct influence, and I might suggest that each boy and girl, after such a course of instruction as has been outlined, would be helped in after-school life if, on leaving, some suitable literature on the subject of youthhood leading up to parenthood were either recommended or presented.

Biology. To indicate briefly the scope of the secondary school in relation to sex-studies, it may be said that if the preparatory school has not already achieved the introduction on the foregoing lines, these would be followed. Then secondary school conditions would allow of more detailed biological study of the evolution of sex from the simple amœboid forms to man. The pupil would in this biological work become familiar with the microscopic details of fertilization and development; and an acquaintance with reproductive processes would be obtained by following out a scheme on an evolutionary basis, *i.e.*, from the simplest amœboid forms through hermaphroditism and unisexualism, external and internal fertilization, oviparous and viviparous types, culminating in the highest type of specialisation, the mammal.

In this work systematically including reproduction in the general study of type, the structure and function of the egg-cell and the sperm, "the carrying cells," is observed in detail; the pupil becomes aware of the different varieties and degrees of complexity in the reproductive and embryological processes; and by extension of his range of facts, is impressed with the marvellous provision nature makes for the perpetuation of life. Moreover, the way is prepared for a better understanding of the working of the laws of heredity.

Now, of course, such lines of work will call for somewhat different and amended qualifications on the part of teachers. Herein lies the work of the training college, where courses of work such as would fit the students to deal with the biological approach to sex studies would be necessary. It will be realised, though, that the few rather than the many would be called upon, or indeed feel capable of dealing with the final stages of the sex studies. Yet all should have the training, not only to enable them to teach if necessary, but for their own personal benefit, to give them the right conception of the sexual life.

The training should, consequently, proceed along the lines indicated in the school course, the physiology and hygiene courses duly incorporating the physiology and hygiene of sex, some training in the essentials of child-bearing, together with such information of the social evil, the social diseases, sexual malpractice, and the principles of heredity as may lead them to understand and to uplift the sexual life of the child. The symptoms and correction of sexual malpractice should be duly regarded, and the student should be guided to the understanding of temptations to which boys and girls may be exposed, so that they may be prepared to warn against and to forestall such falling into temptation as might be the outcome of ignorance.

Successful teaching will very largely depend on the teacher who must deal with the topic without any feeling of embarrassment, who must weave the subject matter so tactfully and cleverly that, though the aim of work is not announced, it is evident by the time it is achieved. When the biological references are skilfully picked up and massed into a whole,

human processes may be taught largely by analogy. Skill in the provision of illustration will largely contribute to success. Further, to keep in view the vivid personal aspect of sex studies, every attempt to accentuate the relation of the other subjects of the school curriculum to the personal experience and requirements of the child should be made.

I have only attempted to indicate how sex-studies may be pursued. It is not advisable to attempt to lay down rules for the carrying out of instruction. One can merely recognise that while the fundamentals of sex physiology and hygiene and the principles of right living could be dealt with in ordinary class, certain aspects of the problem might be more effectively communicated to boys and girls on leaving school, or in continuation classes, or to individuals needing special help, *e.g.*, though the iniquity of misusing the reproductive organs would be emphasised from the foregoing nature study reference in class, any child known to be a victim of the habit would require special counsel.

In conclusion, let me make quite clear that I do not suggest "sex specialists" any more than I suggest that "sex studies" as such should find a place in the school curriculum. But we must recognise the fact that, though the work covers a field of knowledge which every man and woman should have, it calls so much for personal efficiency and tactful treatment that it would be ineffectual, if not injurious, in the wrong hands.

Instruction in sexual hygiene is quite a possible introduction into the school and college curriculum. I have letters and communications from many teachers, chiefly in America, who have already dealt with the subject, and who speak satisfactorily of the results obtained; and in England, too, there are instances of isolated attempts, which show that it is perfectly possible to deal with this aspect of education in school, given, though, on the part of the teacher, not only knowledge qualification, but thorough personal efficiency.

Parents and the Education of the Sense of Sight.

By M. Jules Renault,

Inspector of Training Colleges, formerly Professor in a Training College, Belgium.

Translated by T. G. Tibbey, B.A.

Most of the ideas we have of the external world come to us through the sense of sight; hence it is prudent to provide for our children some direct education of this sense, and to this end it is the parents' first duty to see that the organ of vision is unimpaired.

It has been conclusively shown that myopia is less common in the country than in the town, a fact for which heredity offers some explanation, but it is heredity compounded with the environment. The normal eye is so constituted that it is able to see without effort at a mean distance of from six to nine yards. In towns we are most of the time shut up in places too small to call for such vision, and often badly lit, and the muscles of the crystalline lens are almost constantly adjusted for an artificial degree of accommodation, a fact not without its influence upon the form of the lens itself. In the country on the other hand the view is not so often obstructed; effort is rarer, fatigue is less, and it is not astonishing that the sight should be better.

Fortunately it has now become common to have the children in the schools examined by the school doctor at the beginning of each year, and among other things he tests their vision. The teachers also are able to judge by vision test cards if the sight of a pupil is normal or not, and in the latter case the parents are warned, and advised to have the child more thoroughly examined. But nothing prevents parents from making, by means of vision tests, a general examination of their childrens' sight, even before they have arrived at school age, and there exist vision tests adapted to those unable to read.

But in addition to this, parents are also able to train their children to look, to see and to remember; the normal eye is able

to look and see, but it does not follow that it knows how best to fulfil this double office; the education of the sense of sight should by a careful and progressive training enable children to see many things together, quickly and accurately.

By accurate vision is meant the power to distinguish forms and colours clearly, and to judge distances. How many children and adults are not able to differentiate the most obvious shades of even one colour, and how many æsthetic emotions are thus lost? They are incapable of perceiving the variety of colours in a view or a picture : the great displays of nature have no eloquence for them. The play of light, the delicate gradations of shades, the many harmonious tints do not exist for them, and their spirit is not moved by the poetry of colour.

The eye is like a photographic camera, of which the sensitive plate is represented by the retina, upon which are imprinted the images of all objects within the field of vision. The object is to train children to look at, to see exactly and quickly many things at once, and this can be done by means of exercises which parents are able easily to set. Thus to train accuracy we can ask him to separate different tints in variously coloured wools, and more than one child we have known has been able after some months of such training to distinguish the slightest shades of the same colour. Or we may reach the same end by calling the child's attention to the different colours in a picture, or in a landscape.

We can also teach him to judge distances, to compare lines that have been separately presented to him, etc. In order to teach him to see quickly we should show him for a very short time, two seconds for instance, some very simple figure such as a square, which he should then draw. The design can be complicated in proportion as he acquires visual power; a square open at the top, bottom, right or left; a rectangle, lozenge, triangle, then irregular figures increasing in difficulty, and then more complicated drawings. The progress made after a few such lessons is often astonishing.

To the same end also a child can be shown a picture for two seconds and afterwards asked to tell what he has seen. The analysis will become more thorough in proportion as the child learns to see more in the same time. The conjuror Houdin put his son through a special course of training, which consisted in making him walk rapidly by the windows of a shop and notice as many objects as possible. There is evidently here, as in all the other exercises we have mentioned, both physical and intellectual education. The image imprinted on the retina should be brought to consciousness, and the exercise bears upon the rapidity of the intellectual act.

At the end of some months the child perceived at one glance so many things that his father proclaimed him as being endowed with wonderful second sight and being able to tell the nature of any object presented to him, though his eyes were bandaged. That is to say the child, before his eyes were closed, had time to see all the objects in the room likely to be offered to him.

Our ideal is evidently not the production of such prodigies, but such exercises are likely to give to a child a skill and a habit which cannot but be profitable to him.

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

5. *The Habit of Being Calm.* Compare the following cases : Henry's mother is a peasant woman, obliged to work in the fields. Henry is usually left alone, either in his cradle or carefully wrapped up and placed under a tree. The child is good and quiet, amid quiet surroundings. Such a child is likely to develop a contented mind and a calm spirit.

Peter, the hope and joy of a well-to-do family, is very different. Constantly nursed and handed round from mother to nurse and from nurse to grandmother, he is petted and spoilt and has not a moment's peace. He will suffer for it

later, for a spoilt child easily becomes disagreeable and the disagreeable child grows into the ill-tempered man. The young child needs quiet quite as much as it needs fresh air and milk. A quiet atmosphere is not altogether easy to procure for the growing child and yet perhaps it is one of the chief aids to the growth of the child's moral constitution, for it is during a period of repose that right feelings and a well-balanced intelligence are developed. The highest faculties as well as the noblest moral qualities alike owe their perfection to an atmosphere of serenity. And if ever our human nature needs this quality of repose it is in the bustle and excitement of the present moment when society is being ravaged by the terrible moral epidemic of nerves. Now, how can we procure for our child this calmness of temperament? Is not this pre-eminently one of Nature's gifts? Certainly, like every other good gift. But if we keep a young child in a constant state of agitation and excitement his nerves will soon become over-strained, the whole organism will suffer, health, intelligence, temper and nature's handwork will be spoilt by our lack of care. This law, then, follows very clearly: "Calm of the spirit depends closely upon calm in the surroundings." The child will live in an atmosphere of calm, if he be brought up not to scream and to be easily satisfied and happy.

The child who is in good health is naturally happy. Merely to be alive, to breathe, to look about, to move his limbs seems to make him happy. A child of six months, half awake in his cradle and playing with hands or toes is perfectly happy; so, too, is a child of nine or ten months, sitting on a rug and amusing himself by scattering about various objects and gathering them together again. While he is thus playing, you can go on with your work, a look, some sign of interest from time to time, are enough to let him know that there is someone looking after him and that he is quite safe (Mme. de Saussure).

One day Leo was thus busy playing with his toys, and from time to time feeling his little toes. His nurse suddenly swooped down upon him, danced him up and down and swung him about. When asked why she did this, she replied, "To amuse him." "He was better amused by himself," said the child's father. "Let us be careful not to disturb his inner activity; it is more real and efficacious than any occupation which we impose upon him...Hence, it is better to occupy little children with things rather than with persons. Things are restful and not likely to upset their nerves; persons inspire them either with sympathy or dislike."

6. *The Habit of being Sympathetic.*—Hitherto we have only spoken of the cultivation of habits of direct value to the baby himself; he must, however, begin to learn to do something for other people. But, it may be asked, can the little baby affect others by his acts? Yes, indeed; does he not make us suffer by his naughtiness and rejoice at his smiles? The child is naturally all smiles and affection where he is well and properly looked after. Provided he is kept in good health and free from excitement, he will be insensibly trained in sympathy, and if he sees about him only smiling, happy faces and hears kind, soft words, he will coo and smile. Love begets love.

Only it is not enough for the child to love his mother and his nurse, he must be affectionate to all, even to strangers. The child should not be always entrusted to the same person, it is good to change him from one to another, and if he cries take no notice. A little girl of six months was in the habit of crying when her father took her from her mother. The father would then take her into the drawing-room and try to distract her attention by making her look at something or other. A few seconds after, she had forgotten her fears, and by the end of a fortnight she ceased to resent the change. If at the first cry, the father had given her back to her mother, and had not persevered in this way, the child would never have wanted to leave her mother; now she

goes to anyone willingly. Whenever the child is given to a stranger, the mother or nurse should always make a point of treating the person kindly and affectionately. The child's instinct of imitation will lead him to smile too, and thus he will learn to be loving to all.

7. *How to Form Certain Habits.*—In brief, from the cradle upwards the child's physical well-being must be cared for by the laws of hygiene, and in the moral order he must be calm and affectionate. If we could secure this training for our child he would be able to say to us later on: "I possess the secret of happiness and the reason lies in the habits my parents made me contract. While I was thus being trained, I never suspected that things could be otherwise. I never suffered then and now I reap the benefit."

Thus it is all-important to act in one way or another *from the cradle,* but which way?

If I allow the child his own way at the beginning he may form bad habits, which he will afterwards find great difficulty in eradicating and still more, in replacing by good ones. One may bend a twig, but not a full-grown tree. A young mother says that the child's training must be begun during the first six years; if left till later it is doomed to failure.

If, one day, I put baby to sleep in his cradle, and another, in my arms; if I sometimes accustom him to one régime and sometimes to another, his ideas become confused and he will not know what to expect. A second rule to follow is this: Treat your child always in the same way.

Finally, if I want baby to stay in his cradle when he is tired of being there or to be quiet when he wants to stretch himself and move about, he cannot be expected to acquire habits altogether contrary to his needs and wishes. I must manage so that he finds pleasure in forming good habits.

Thus I deduce these three laws, obedience to which must secure success: (1) Begin your training from the very first day; (2) Have the same acts repeated again and again; (3) Make their acquisition easier by making them pleasurable. There is one fact I must take care never to forget, and that is the insecurity of habits at such an early age. "A little boy of two and a half," says M. Perez, "changed in disposition three or four times, according to the different places at which he stayed during a two months' holiday. At his uncle's he was very docile, gentle, loving and cheerful; very disagreeable, sulky, quarrelsome and noisy at his aunt's; and rather reserved and silent, amenable and obedient at the house of one of his mother's friends." Now, if a child's disposition changes according to his surroundings, he will be affected in the same kind of way if I change in my manner towards him, for I shall be, so to speak, placing him in a different atmosphere. I must then be unceasingly on my guard and never relax.

II. Obedience. Obedience is not gained by words alone, or by entreaties or by force.

If obedience is to be obtained, we must set up the habit from the first year of childhood, we must know how to command, inspire respect, win the child's goodwill and justify commands to him, and finally we must know how to stimulate the desire to obey.

If we are obliged to punish, we should avoid rebukes before others, angry words, excessive humiliations, terrifying or absurd threats, solitary confinement, blows, deprivation of playtime, or necessary food. Slight punishments, given at long intervals, are always felt very severely, *e.g.*, displeasure, reproaches, temporary removal of esteem or show of affection. Above all our action must always be according to the individual character.

All modes of punishment are of no avail without a common understanding between the father and mother.

1. *Bad ways of trying to get obedience.* "Jean, you'll fall into the fire! Marie, don't get on the chair, you'll hurt yourself!" And while saying this, the poor mother runs from one child to the other

to snatch them by main force from dangers which they ought to have avoided, had they been accustomed to obey, at once. Injunctions frequently repeated and never listened to, make me think of a door blown to and fro by the wind, never really open or properly shut. Shut it once for all and make an end of the matter.

A little boy went, in spite of his father's prohibition, down to the water-side, the father brings him back in his arms, saying, "you must do as you are told, or else I shall make you; I am the stronger." "I don't care," replies the little rebel, struggling with hands and feet. Not a bad retort, my little man. You already feel that it is not brute force alone which rules us.

"You dare to disobey me! It won't be any good, I am the master!" Yes, you are the master. Act like a master and don't talk about it.

"I'll call the policeman! I'll put you in prison! I'll send you away to sea." This is what some fathers are always repeating, but they are only idle threats which are never carried out. At first the child is afraid, then his ideas of right and might become confused, and he finds out that you do not mean what you say. Do you think that he can continue to respect you?

"Wait! I'm coming after you!" This is a stupid threat; the child should feel respect for you, whether you are there or not. If you must "come," in order to be obeyed, do so without talking about it; another time, perhaps, you will not need to do so.

"If I put myself into a temper, he is frightened." This remark is sometimes made even before the child. Sir, do you really mean that you put yourself into a temper? What an example for your son! He may perhaps be pleased to have made you to put yourself into a passion, but is that a pleasure you should procure for him? You say he trembles before you? Truly one might think that you were proud of yourself. If your child discovers that you take pleasure in his fears—and he will discover it, sooner or later—will he not be likely to be less frightened in the future and possibly even, lose all fear of you in the end?

Too many words, parents, too many words and amid them all, you will probably give vent to some which you will afterwards regret.

A mother was in a bad temper in the morning and had regained her good spirits by the afternoon: then she permitted her child to do what she had forbidden him in the morning. One day some sweetmeats were placed in his reach. He said to himself, "Not now, I'll have some this evening. Mother won't mind then." The child who reasons thus is beginning to despise his mother; of course he is in the wrong, but the fault is the mother's.

Another little child used to ask for a piece of sugar between meals though he was not hungry. It was refused and he began to cry and scream. "Take it, take it," said the poor mother, "now, are you satisfied?" Of course, madam, the child is satisfied. He has got his sugar and he has found out how to make you do what he wants.

Another mother, seeing her big boy of nine was too much engrossed in his game to go at once and do what she asked, said, "Here, take this chocolate and be off with you." Is your son, then, a hireling to be paid for whatever he may do?

Another tried to bribe her little girl thus: "If you don't do what I tell you, you shan't have that pretty frock." So it is the desire for a useless frock—for if it were necessary, you would not threaten to deprive her of it—it is vanity that is to be the motive of your daughter's conduct?

One parent acts from cowardice, another from a misguided idea of force—what a wretched household where one hears nothing but the child's cries and screams. One child stamps his feet in passion, the angry mother slaps him, the child utters hideous yells; another is doing something which he ought not to do at a moment when the poor parent's nerves are upset, the unfortunate child is cuffed soundly, while a third shouts, "Papa,

Mama, I don't want to go out," and fills the air with his shrieks. Everywhere is excitement, the children are cross, the parents cannot control themselves, and the atmosphere is full of irritability: what an education, what goodness, what respect for rule can you hope to obtain? Take care then that there is little noise, few commands, few difficulties. Send the children out so that they may get the necessary rest and change; once they come in, learn how to keep them busy and happy. [*Etc.*]

Suggestions for Study and Practice.

The Value of Handwork. "All later mental processes concerned with thought and the ability to abstract, emerge from the background of sense, experience, and work in material provides this. Activity about things gives data from which to classify later, when the age for classification and the more formal ordering of knowledge begins. The child who knits her stocking, using the third needle to enable her to enclose a space, is storing up, though perhaps unaware of the principle, data from which she will one day be able to appreciate the geometric truth that two straight lines cannot enclose a space...This empirical knowledge is very valuable, and much activity about things gives, in the earlier stages, a rich store of experience over which to work later."—*Woutrina A. Bone* in *The Service of the Hand in the School.*

Physical Measurements and Mental Retardation.—From a comparison of the heights, weights and vital capacities (measured by a wet spirometer) of 105 retarded boys (in different classes of a school), *i.e.*, those below the class to which most of their age obtain, with those of normal progress, it appears that: "Since [their] height and weight vary least from the norm, it seems that the demands of growth must be satisfied first and then that the remaining energy can be turned to other work. This is suggested as a possible factor in accounting for much of the retardation.

"Without isolating the different factors that contribute to the retardation, definite conclusions cannot be drawn; yet the limited data presented suggests the following: That the retarded children are as a group apt to be below the normal or accelerated in each of the measurements. That the accelerated tend to stand above the norm. That the accelerated and normal show a higher vital capacity per pound than the retarded. That vital capacity varies most from the norm."—*D. W. De Busk*, on "Height, Weight, Vital Capacity and Retardation," in *The Pedagogical Seminary*, March, 1913.

Civics in Schools.—"In some schools, that the children may learn the rights of citizenship, elections are held, members nominated, and the whole process gone through as in the real world. This seems to me waste of time. So, too, does the frivolous practice of allowing children to bring forward pretended Bills and discuss them in class, such as 'A Bill for the Abolition of Home Work,' and so on. It is making childish what must ever be of the greatest earnestness and importance, and in after years the atmosphere the children brought in school days to the consideration of elections and Acts of Parliament will linger.

"In conclusion, every lesson, in so far as it tends to help the child to self-realisation, and so to self-control, is tending to produce good citizens: citizens who know what they want to do, and will do it well, even if it be only sweeping roads; every lesson that tends to impart information only, and gives a false culture, is tending to produce bad citizens, who will not know what they want to do because they do not know themselves, and will mistake their crammed information for wisdom."—*R. K. Polkinghorne, B.A.*, on "Civics in Schools," *The Journal of Education*, April, 1913.

Dr. Montessori and Traditional Methods.—"Experiment and not tradition for tradition's sake, is the keynote to Dr. Montessori's attitude. When she appears

in revolt against school tradition it is because she regards the customary practice as detrimental to the development of the individual child as a member of a social community. In England, perhaps, many of the faults of infant teaching which Dr. Montessori aimed at suppressing have disappeared or are tending to disappear under the influence of Froebelian ideas. It is not part of my task to compare the ideas of Foebel and Dr. Montessori. The latter is to my mind fortunately free from the symbolism of the former, and I regard the abolition of collective teaching for such young children, except in so far as they form themselves into groups and ask for it, as an advantage of the Montessori plan."—*Dr. Jessie White*, on "The Primrose Path: a Criticism," in *The Educational Times*, April, 1913.

Knowledge and the Soul. "So far from its being a matter of indifference, the kind of knowledge supplied to the educand is of the first importance in determining the sort of being into which he will develop. . . . Information acquired without being assimilated is worse than useless, since it is not only incapable of practical application, but takes up the room of better material. Its presence weakens the potentiality of the soul. True knowledge, on the other hand, is what becomes a part of the soul that assimilates it, and strengthens that soul. It is not so much that the truly educated soul has certain portions of knowledge as that it *is* those portions: they become of its very essence."—*Prof. Adams*, in his book on "The Evolution of Educational Theory."

Notices and News.

The Education of Sight.—We are greatly indebted to M. Jules Renault for his courteous permission to publish this translation of his very interesting and instructive article for parents. He has generously consented to allow us to publish translations of other articles contributed by him to *L'Education Familiale*, and we shall gladly make use of the opportunity.

Our Exchange List. Our journal appears to be getting more and more widely known. We have received invitations to exchange with *Eugénique*, a new quarterly to be issued by the French Eugenics Society, under the editorship of Monsieur Lucien March, Registrar-General of France; with *The American Teacher*, a monthly (except July and August), which is published in New York, U.S.A., and has for its motto "Democracy in Education; Education for Democracy"; with *The Magazine Bulletin of the American Institute of Child Life* (Philadelphia, U.S.A.); with a Russian weekly Social-Pedagogical Journal entitled "School and Life"; and with *L'Intermédiare des Educateurs*, the journal of L'Ecole des Sciences de l'Education (Institut J. J. Rousseau).

School Diet.—A conference will be held at The Guildhall, London, on June 30th and July 1st. The opening session will be devoted to a discussion of papers, which will be printed and circulated in advance, on the working of the English and Scottish Acts governing the provision of meals for necessitous school children. At the second the educational aspect of the problem, the meals of country school children and the relation of school and home will be considered. The morning of July 1st will be taken up with a discussion of the teaching in public elementary schools of personal hygiene, food values, catering and cookery, while the concluding session will be devoted to the consideration of diet, cookery and hygiene in day and residential institutions for children and adolescents, both public and philanthropic, including open air and special schools, reformatories, industrial schools and Poor Law institutions. Full particulars will be sent to anyone forwarding a stamped addressed envelope to the Secretary, National Food Reform Association, 178, St. Stephen's House, Westminster.

Additions to Library.—Since issue of catalogue the following books have been added to the CHILD-STUDY Library:—*Introduction to the Study of Adolescent Education*, pp. 185, 1912, by Cyril Bruyn Andrews. *Twelve Years with My Boys*, pp. 248, 1912, by Anon. *L'année Pédagogique*, pp. 487, 1911, by Cellérier et Dugas. *The Mental Effects of a Child's Environment*, pp. 17, 1911, by T. S. Clouston. *Childhood*, pp. 90, 1912, by Fred Davis. *Roswitha—being leaves from the life of my little daughter*, pp. 332, 1913, by Otto Ernst. *Essays on Duty and Discipline*, pp. 736, 1911, by Otto Ernst. *Marriage and the Sex Problem*, pp. 228, 1912, by F. W. Foerster. *Diary of a Free Kindergarten*, pp. 175, 1912, by Lileen Hardy. *Plans for the Government and Liberal Instruction of Boys in large numbers as practised at Hazelwood School*, pp. 348, 1914, by M. D. Hill. *Sporadic Congenital deafness*, pp. 77, by Kerr Love. *Health of the School Child*, pp. 120, 1906, by W. Leslie Mackenzie. *National Conference on Prevention of Destitution*, pp. 766, 1911; pp. 590, 1912. *Introduction to Experimental Education*, pp. 303, 1912, by Robert R. Rusk. *Experimental Psychology and Pedagogy*, pp. 364, 1912, by R. Schulze. *Mentally Deficient Children—their Treatment and Training*, pp. 236, 1910, 3rd edition, by G. E. Shuttleworth and W. A. Potts.

The Montessori System in Theory and Practice, pp. 78, 1912, by Theodate Smith. *Experimental Studies of Mental Defectives: a Critique of the Binet-Simon Tests,* pp. 155, 1912, by J. E. Wallace Wallin. *Life of Benjamin Waugh,* by Rosa Waugh. *Causes Leading to Educational Deafness,* pp. 37, 1912, by Macleod Yearsley. *Education of the Deaf,* pp. 43, 1911, by Macleod Yearsley. *Adenoids,* pp. 110, 1901, by Macleod Yearsley.

Thanks to Mrs. G. O. H. Jackson, a member of the Exeter Child-Study Society, we are able to give our readers a review of the *Rivista di Psicologia.* The Editor would be glad to receive such a generous response to all his requests.

Reviews.

The Conservation of the Child. By Arthur Holmes, Ph.D. Lippincott and Co. Pp. 345. Price 4s. 6d. net.

This is a manual of clinical psychology presenting the examination and treatment of backward children, by the Assistant Director of the Psychological Clinic in the University of Pennsylvania. This clinic has been in existence for sixteen years. Such an institution has long been urged as a necessity in centres of population such as London, Manchester, or Leeds, but with our capacity for muddling along, it remains a want. For actual advances in knowledge we are content to be parasitic on the work of France, Germany, and America.

Remembering the purpose of the writer, his book may be shortly stated as most satisfactory and very much better for all practical purposes than the only English book which is extensively quoted.

There is a well digested historical account of the education of defectives, followed by an account of the psychological clinic and its methods. For teachers as well as doctors the book is full of interest and suggestions. "In fact the success of an ordinary examination depends not so much upon specialized apparatus as it does upon the inventive genius of the investigator in the manipulation of the simplest objects at his command. . . . Common toys will therefore often surpass expensive apparatus in utility." The office of director and chief examiner in such an institution, he thinks, should be held by a psychologist. We would be inclined to suggest that neither psychologist nor doctor as such, is sufficient, but that the director should combine both functions, and should also have a working knowledge of the school and the teacher's work, all of which means some specialized training to this end.

The classification of the cases is well given, and a table from Goddard, of Vineland, may be quoted, from its lucidity in comparing nomenclature, industrial classification and the Binet scale.

Mental Age.	Industrial Classification.	Nomenclature.	
1 year (under)	(a) Helpless, (b) can walk, (c) with voluntary regard	Low	Idiots
1 year	Feeds self, eats everything	Middle	
2 years	Eats discriminatingly	High	
3 years	No work, plays a little	Low	Imbeciles
4 years	Tries to help		
5 years	Only simplest tasks	Middle	
6 years	Tasks of short duration. Washes dishes	High	
7 years	Little errands in house. Dusts		
8 years	Errands, light work, makes beds		
9 years	Heavier work. Scrubs, mends, lays bricks, cares for the bathroom	Low	Morons
10 years	Good institution helpers. Routine work		
11 years	Fairly complicated work with only occasional oversight	Middle	
12 years	Uses machinery, can care for animals, no supervision, cannot plan	High	

The informing discussion of classifications cannot unfortunately be abstracted, but full warnings in regard to the application of such tests as the now popular scale of intelligence are quoted. Binet himself wrote for those persons who desire to employ the method that anyone can use it for his own personal satisfaction or to obtain an approximate evaluation of a child's intelligence; but for scientific results it is absolutely necessary that the observer should have served an apprenticeship in a pedagogical laboratory or possess a thorough knowledge of psychological experimentation.

The account of moral deviates is fuller than in

any similar work, and whilst quite satisfactory shows that the author is still groping for a working hypothesis of moral imbecility.

Although the suggestion is not elaborated, yet these psychological tests in the case of the younger children should always be checked by physical or physiological observation. A scale of physiological age is as important as the standard of intelligence. Both are necessary evidence in forming what must ultimately become a legal judgment. Mental defect has to be classified in relation to society. We are still committed to the mistake of thinking that it is economy to attempt to make some portion of the classes described in the table quoted above contribute to their own support. Thereby enormous expense indirectly results. They are not and never can be self-supporting. For the sake of society they are to be deprived of much, they should have much made up to them, but they should also be made thoroughly innocuous for the future. Although this book does not discuss these solutions, it brings them nearer. The clearness with which it sets out classifications will generally raise the whole level of knowledge of the subject with which it deals, and help common sense to replace much sentiment.

Music and Delight. By JOHN DAULBY PEAKE, B.A. Pp. 52 (music size). The Vincent Music Co. Price 3s. net.

This is a book of twelve lessons to be given by a mother to her child, so as to prepare for the music teacher, and contains some good suggestions for learning piano-playing experimentally and through song. Much more numerous and more carefully graded exercises would be needed by the mother who cannot discover such for herself.

L'Intermédiare des Educateurs. Published by L'ECOLE DES SCIENCES DE L'EDUCATION (Institut J. J. Rousseau), Geneva; six numbers per year. Price: 3 fr. in Switzerland, 3.50 abroad; for teachers, 1.50 in Switzerland, 2 abroad.

The aim of this journal is "to contribute to the building up of Positive Pedagogy, on the one hand by initiating those who wish to take part in the work into the questions which need solution and suitable methods for solving them, and on the other by serving as a connecting link between investigators, and grouping and co-ordinating their investigations and results...By *Positive* Pedagogy is meant a pedagogy founded upon facts, observations, and systematic and controlled experiments, not upon affirmations which, so long as they have not undergone the test of verification, represent only—however excellent they may be in themselves—mere opinions." The first number, October 12th, 1912, contains a suggestive note on "The use of the watch in a reading lesson," and a questionnaire to discover "at what age a child feels the need of a definition such as the adult would formulate."

The American Teacher. New York, U.S.A. 50 cents a year.

Vol. II., No. 3, March, 1913, of this journal contains a questionnaire on Corporal Punishment in School, addressed to head teachers in New York, and three very interesting replies thereto. Other replies are to be published.

La Rivista di Psichologia. Edited by Professor G. CESARE FERRARI and Dr. LUIGI BARONCINI. Bologna. Pp. 120. Price, L. 15 for Italy and 25 abroad, per annum.

This review is the organ of the Italian Psychological Society and the Institute of Experimental Psychology in Rome. The January-February number contains an extremely interesting and able account by Sig. H. Gemelli of researches and experiments made by him on the subject of illusions in the field of textile sensations. In a short prefatory notice the author lays particular stress upon the importance of studying closely and exhaustively all the factors which determine these illusions. The aim of his researches and experiments is two-fold, viz. :—1st, the bringing to light of any of the factors of perception of space by the touch; 2nd, the determining (especially by means of comparisons with the illusions that occur in the field of vision), whether the laws governing the perception of space are the same for both these sensory fields. The article is copiously illustrated by diagrams, showing the construction of an estesiometer, invented by the author for the purpose of applying, measuring and registering the various stimuli used by him, and their effects. A set of twenty two tables shows the exact results obtained by Sig. Gemelli's experiments.

Sig. M. Ponzo, in an article on "The space impressions received by the skin and the time elapsing between their reception and reaction" gives some highly instructive accounts of researches recently conducted by him. The review also contains a chronicle of events of scientific importance and notes on works bearing on psychological studies.

PUBLICATIONS RECEIVED.—*The Journal of Education; The Educational Times; The Parents' Review; L'Education Familiale; L'Union Morale; Archives de Psychologie; La Revue Psychologique; The American Teacher; Educational Review* (U.S.A.); *The Pedagogical Seminary* (U.S.A.); *Child Life; Journal of Educational Psychology; The Demonstration School Record* (Manchester University, edited by Prof. J. J. Findlay); *Holiday Resorts and Recommended Addresses,* Francis Hodgson, pp. 142, price 1/- net.

Child-Study.

The Journal of the Child-Study Society.

Vol. VI.—No. 6. OCTOBER, 1913.

Editorial Notes.

At the beginning of another session of work, we would like to urge that it should really be a session of—*work*. Speech has its high and essential functions in the progress of knowledge, but *work* is the mother of both knowledge and speech. Our Child-Study Societies have by no means failed in doing useful work, but we can hardly claim that practical work has been the supreme aim and concern of our members. If learning, even with adults as with children, comes chiefly by doing, is it not true that we have been content to listen too much, and therefore, to learn too little? Let us then be up and doing, for our own advantage and pleasure, and the great good of the little ones. Questionaires, Study Circles, Personal Observations and Investigations are some of the means to this end.

An example of the sort of work that is suggested is supplied by Mr. Webber's very interesting paper on *Two Hours' Play of a Four Years' Old Boy*, in this number, which he says "is one of the results of an interest aroused by reading *Child-Study*." Such work is wanted for the conference at Edinburgh, next year, on *Experimental Work in Education*, which, Miss Louch writes, "it is hoped will give an impetus to the research work in which our members should be engaged."

For teachers, as such, there is a very wide scope for work, which, as Dr. Claparéde has pointed out, only they can do, and which is of the very highest value to the psychologist and experimental pedagogy. Young teachers who have not long left the training colleges, in particular, and all teachers who are true educationists, ought to take up such work. It is the foundation of the highest successes in practical teaching, and the corner-stone of real educational progress. To take just one point as an example:—True educational classification only begins to be possible when we are able scientifically to test and evaluate each child's individual capacities and powers.

Such a scientific educational classification is becoming possible through the Binet (and other) mental tests, and every teacher should become familiar with, and make practical use of, these. Mr. W. H. Winch, to whom we are already very greatly indebted for valuable original articles, has been good enough to promise a series of copyright articles for publication in *Child-Study* on *Binet's Mental Tests: What they are, and what we can do with them.* These will begin next month, and we ask our readers to make this fact widely known, as it is an exceptional opportunity for teachers, and all interested in Child-Study, to obtain the very best guidance in the understanding and application of Binet's theories.

Child-Study and Pathology.

By Sir James Crichton-Browne, M.D., D.Sc., LL.D., F.R.S.

Presidential Address, Liverpool, May, 1913.

The Child Study Society begins its annual conference this evening in a City, enlightened and progressive, in which its aims and objects are certain to meet with sympathetic consideration.

Liverpool owes a heavy debt to Child-Life, for, in the past it has held a bad

pre-eminence in infant mortality, and in the crippling ailments of early years. Occupying an exceptionally salubrious situation, on a continuous slope, with a dry subsoil and excellent natural drainage, and fanned by western sea breezes, it ought to have been a stronghold of health, but it allowed itself, before it had awakened to its higher interests, to be converted into a den of disease. The old borough lying between the pool, now completely obliterated, and the river was a conglomeration of narrow alleys, built without any regard to sanitary provision and was repeatedly visited by plague.

With the expansion of the town beyond its original limits and its spread up the slope, a better state of matters began to exist, but the demand for cottages which arose at the begining of the nineteenth century led to the erection on a large scale of courts, straightened *cul de sacs,* close-packed, with no through ventilation, which became almost impregnable haunts of fever, tuberculosis, and the minor maladies which invariably follow in their train. The death rate of Liverpool rose high, and as under such circumstances, it is always Child-Life that suffers most, the slaughter of the innocents went on at a rate which we should now regard as appalling.

But if the sanitary history of Liverpool in the past has been faulty, its reformation in modern times has been remarkable, for there is, I believe, no city in the kingdom that has more vigorously or successfully grappled with sanitary problems of special difficulty. Enormous sums have been expended on the clearing of insanitary areas, and the reconstruction of dwellings, on water supply, on drainage, on public parks, on municipal cleanliness, on the protection of its great water-way from the intrusion of epidemic or infectious disease, and of unsound food, and on many other sanitary precautions, and the remunerative nature of this expenditure is clearly shown forth in the reports of Liverpool's able and accomplished Medical Officer of Health, Dr. Hope.

In the death rate there has been a steady decline. It stood at 26.4 per 1,000 living in 1887, and at 17.7 in 1912, a reduction of more than one-third. In the rate of infant mortality, there has been a still more striking fall. In 1874 it stood at 234 per 1,000 births, in 1912 at 125. In 1911, the last year for which returns are available, there was a check in the fall of infant mortality clearly traceable to the labour disturbances which unhappily prevailed in the city in that year. Poverty was accentuated, strife and disorder distracted the attention of the parents from their infants and young children; there was for a time a difficulty in obtaining food, and even sanitary operations were suspended, and so the innocent suffered for the guilty, or shall we say for the foolish and misguided, in this case, and the infant death-rate went up to .154.

Even in the dark pre-sanitary days Liverpool had a care for its child-life. It was one of the first towns to establish those Sunday Schools, which have had so unobtrusive but powerful an influence in shaping for good the constantly renewed rising generation. The first Sunday School sprang from the efforts of Robert Raikes in Gloucester in 1780, and in 1784, a town's meeting was held in Liverpool, to consider the subject, and it resolved on founding Sunday Schools for poor children, and Sunday Schools provided by the various denominations have ever since existed in Liverpool. It is the religious spirit that has sustained and pervaded these schools and supplied to those attending them ideals of incalculable value, but they have furnished secular teaching, although not of a high order, placing the key of knowledge in the hands of multitudes who would not otherwise have been able to read or write.

We have the testimony of Adam Smith that they effected a visible improvement in the manners and morals of the children, and it is certain that they must have contributed to sanitation and personal cleanliness, for Robert Raikes laid it down as an inflexible rule that all children

attending them must come with clean hands, clean faces, and combed hair. How important has been the part played by Sunday Schools in child-culture and the preparation for life may be gathered from a recent return, showing that they are now attended by upwards of six million pupils in England and Wales.

The Sunday Schools in Liverpool were soon followed by day schools, the earliest being, I believe, the old City School in Moorfields, opened in 1789. There were, of course, day schools in Liverpool before that. There was a Grammar School, for instance, endowed in 1515, by John Cross, rector of St. Nicholas' Flesh Shambles, London, but it was at the date mentioned that the movement for popular education began, a movement that, with fluctuations, has progressed ever since, that has in recent times gained momentum in an astonishing degree, and that has culminated in the well-equipped, flourishing and growing university in the buildings of which we are assembled.

Parellel with educational advancement in Liverpool there has gone a progression in the hygienic care of childhood which also has been greatly accelerated of late years, and it is to that, that part of the reduction in infantile mortality must be ascribed. The well-to-do classes have come to take a more scientific view of child-culture, and have discarded many old prejudices and pernicious practices, and the poor are being awakened to a higher sense of their family responsibilities. Amongst the poor in Liverpool, however, that is still widespread inattention and neglect of children, which together with improper food and scanty clothing, are reflected in an unnecessary sacrifice of life.

In the poorer districts it is obvious that the requisite care is not bestowed on infants, especially on those whose custody is handed over to irresponsible persons while their natural guardians are engaged in some occupation, but it is to be hoped that an improved state of matters will result from the judicious measures which the health committee have taken. A large staff of female inspectors is employed in instructing mothers or persons in charge of infants. Cards of directions and advice are distributed wherever, under the Notification of Births Act, it appears they would be useful. Suitable food at a price accessible to all is provided for mothers who are unable to nurse their infants. Day nurseries have been established which afford to girls about to leave school valuable opportunities of learning the proper management of infants and young children. Hospital accommodation has been provided for infants suffering from measles and whooping cough, which not only benefits the sufferer but removes the source of infection.

The infants are being attended to in Liverpool, and the children are not overlooked, for they are profitting and will profit to an incalculable degree, by those child-studies on the large scale, included in the field of school hygiene and medical inspection, which are now happily imposed on Local Educational authorities. The comprehensive investigation which is now going into the physical condition, not only of children known or suspected to be weakly or diseased, but of all children, and the special inquiries which a number of school medical officers are carrying out, are throwing a flood of light on child-life, and suggesting the steps that are necessary, for the adjustment of education to the needs and capacities of children of different types, for the provision of remedial agencies, for physical and mental defects, and for the arrest of various maladies and degerations at their incipient stage.

Up to the present time medical inspection has revealed an unsurmised plentitude of physical defects and diseases in school children, and as it goes on and becomes more thorough and individual, embracing a survey of the whole life, conditions and circumstances of the child, it must amass information of the utmost significance to all engaged in child-study.

In connection with Child-Study hitherto psychological observations and inquiries have naturally taken the first place, as all who, with watchful eyes and discerning

sense, come into contact with children, can participate in them more or less. After them have come physiological observations, on growth and evolution, and functional activities generally, and more particularly on those of the brain and nervous system. And in the third place we have had observations on parentage and environment in relation to child-life. In all these departments ample scope for diligent child-study still remains, but there is yet another field, comparatively untrodden, upon which I would invite students of Child-Study to enter, and that is the pathology of childhood.

I would be the last to recommend any amateur dabbling in medical science, but there is a large number of morbid conditions to which infants and children are subject, which not only interfere with bodily development, but modify or mar mental manifestations with the nature and treatment of which all parents and teachers should be acquainted. They cannot escape them. If they are to do their duty to their children they must know how to deal with them.

There was on a memorable occasion a difficulty in finding ten righteous men in a city-full. There are largely attended schools to-day in which it would be impossible to find ten sound children, absolutely sound in wind and limb. Almost every child shows a blemish of some sort, which interferes with its educability or blights more or less its prospects in life. It may be that it is malnutrition, or ringworm or adenoids, or dental decay or defective eyesight or hearing, or chorea or rickets or intestinal disorder, or tuberculosis, or heart disease—almost every child is touched with one or the other of these flaws, many by two or three, and we look in vain for the child-stuff out of which we can hope to build up a Venus de Medici or an Apollo Belvedere.

But all those crippling agenices, undermining childhood are preventible or curable when taken in time. It is in their infancy that diseases and degenerations are like infants, easily snuffed out, and it is therefore of vital importance that those who are in intimate communion with children should be quick to note the beginning of pathological changes. Some of the conditions mentioned can only be reached by prevention, directed to the abolition of predisposing causes, poverty, vice and ignorance in its grosser forms, but many can be effectually remedied by prompt treatment, and in order that prompt treatment may be secured, skilled observation is necessary, which might often be supplied by parents and teachers before the medical officer appears on the scene. Before he arrives irreparable mischief has often been done.

In the matter of dental decay the reports of medical inspectors from all parts of the country show terrible dilapidation in children of that ivory palisade that guards the entrance to the alimentary canal. To take one of the worst returns in Shropshire, only 6.5 per cent. of the boys, and 7.6 per cent. of the girls entering the schools were found to have sound teeth, 23.6 per cent. of the boys and 22.5 per cent. of the girls had somewhat defective teeth (that is to say less than four teeth carious), while 69 per cent. of both sexes had seriously defective teeth (that is to say more than four teeth were carious). To take the very best return indeed a quite exceptionally good one, that from Rochdale, 52.2 per cent. of the school entrants had sound teeth while 30.3 per cent. had somewhat defective and 17.7 very defective teeth.

Now the establishment of medical inspection and dental clinics and the distribution of tooth brushes will do something to rectify this state of things, but it ought never to have arisen. It is in the nursery that the foundations of dental integrity should be laid down, and in early childhood, before school days, that the teeth should be saved from corruption. By the supply of proper food, by vigilant supervision and systematic cleansing, even in these days of delicate enamel and bacterial activity, dental decay and oral sepsis with all its disastrous consequences may be largely avoided.

Visual defects again throughout the

land exist to an extent well calculated to create anxiety, and seem to be increasing. Dr. Hope tells us that in Liverpool, of 4,044 boys and 3,760 girls whose eyesight was tested shortly before leaving school 8.21 per cent. of the boys and 8.09 per cent of the girls had defective vision in one eye, and 15.45 and 18.32 per cent. of the girls had both eyes defective. Such visual defects have a serious bearing on the child's progress at school, may have prejudicial effects on its health, and must prejudice its industrial outlook. The annual examination, Dr. Hope says, has been productive of very beneficial results, many of the cases having been quite unsuspected by the teacher. But there are many defects of vision that should be detected and corrected before school-life has begun. The causation or aggravation of defects of eyesight in schools may, it is to be hoped, be in some measure restricted by the adoption of a standard school-book production in the types recommened by the Eyesight Committee of the British Association in its report, which has just been issued. They find a very serious amount of visual defect among children of school age, 30 per cent, and are of opinion that some portion of this is preventible by the selection of suitable school books.

The gravest of all the pathological conditions in childhood; on account not only of its immediate effects, but of its remote consequences, is tuberculosis. The death-rate from all forms of tuberculosis amongst children under 15 years of age is greatest during the first five years of life, but it is tubercular meningitis, and peritonitis, or tabes mesenterica and what is known as surgical tuberculosis, that is to say tuberculosis of bones and joints, that are then most fatal, for the mortality from phthisis is at its lowest in that quinquenium. But while the mortality from other forms of tuberculosis declines after five years of age, that from phthisis increases and after fifteen it goes up with a bound. The general death-rates during the school period are low, but phthisis causes one death in every twenty-one deaths from five to ten years of age, and one death in every seven from ten to fifteen.

The death-rate from all forms of tuberculosis amongst school children steadily decreases and the findings of the school medical officers for 1911 which give a percentage .59 of existing tuberculosis in the routine cases examined by them, and 1.68 in the special cases selected by school medical officer, or nurse or teacher, also show a decrease possibly due to the exclusion of tuberculous children from schools. An additional and much more substantial increase may be confidently anticipated, now that we have notification of tuberculosis, opening the way to appropriate assistance and treatment to phthisical persons and to the adoption of precautionary measures, sanatorial benefits to the tune of a million and a half, tuberculosis dispensaries, where accurate diagnosis can be ensured, and home treatment efficiently conducted, and the Milk and Dairies Bill now before Parliament, which should, if passed, protect our milk supply against tubercular and other contamination.

But notwithstanding its reduced mortality and prevalence, tuberculosis still exists amongst our children to what may be called a frightful extent. Professor Gratiolet has estimated that 15 per cent. of town children are infected with a commencing form of phthisis. Hamburger has declared that 90 per cent. of all children up to the completed twelfth year are infected with tubercle, and Schlossman affirms that tuberculosis is a true childhood disease, and if it is to be rooted out must be attacked and treated then. The researches of the last ten years have undoubtedly brought to light facts that point to the conclusion that in a very large majority of cases infection that ends in phthisis occurs during childhood, and indeed in the first year of life.

Roemer has declared that probably every person crosses the threshold of childhood infected with tuberculosis. Such a primary infection according to him, confers a relative immunity for the remain-

der of life. This immunity is, however, not absolute, but is contingent on the dosage of subsequent infections. In a tubercle free subject a mild dose of the virus produces latent tuberculosis—on an immune it has no effect at all. A larger dose causes chronic disease in a tubercle free subject, and has no effect on immune subjects. Only massive doses have a limited deleterious effect on immune subjects, while they produce an accute form of the disease in virgin soil. [*Etc.*]

The Child of the One-Roomed House.

By W. Leslie Mackenzie, M.A., M.D., LL.D., F.R.C.P.E.,

Medical member of the Local Government Board for Scotland.

Usually, houses are classified according to the number of people they house. But this gives no idea of the house as a home. To be a home the house must be the home of a family. The family is a composite unity, having within itself all the elements of the potential city and requiring for its functional growth and expansion all the institutions that in their total constitute the actual city. This fact is too little realised. The house is supposed to stop outside the door. But lay aside for a moment those rigid ideas about stone and lime, or bricks and mortar, or wood and iron, or stones and peat, or stones and sand, or even about caves in the rock. All of these types of houses are, in Scotland at least, found to be occupied by human beings. Consider the house only as the focus of family energies, as a home. If you analyse what the family energies are, you will find that they must reach out in a thousand directions in order that the family may, as the growing unit of civilisation, subsist at all. If the crude idea of a house were true, the most perfect house would be the prison cell, where everything is brought to the inmate without any trouble to him—or her.

As a fact, the home is the precise contrary of this. Nothing comes in except what the family goes out to seek. The house is simply the temporary work-place, the nesting place, of the family. Our ideas about it are much too crude; for we always tend to think of it in terms of dead walls and groups of rooms and furniture instead of in terms of living minds and hearts, and desires, and ambitions, and irrepressible growths and activities. If the members of a family were all wooden blocks, it would be easy to arrange them neatly in a cellar. But in the scores of cellar dwellings I have visited I never found a single contented family. The blocks happen to be alive, and never stay where they are put. The family is a raging torrent of hungers and ideals. And this is true of every family—rich and poor.

If, therefore, you consider the house not a rigid structure but as a focus of energies—a fixed focus like a feudal castle, or a moving focus like a gypsy-van—you can picture more clearly what the housing problem means. If, for a family of five people, in the middle classes, it is necessary to have at least five rooms, and as many more rooms, large and small, for service, how shall the energies of a family of five persons on the lower economic levels be adquately spaced in a single room? This is the kind of question I should like to put before the Conference.

But it is necessary to be a little more specific. Houses can be classified according to the families they accommodate; but they can also be classified according to the effects on the child. If the family is the growing point of society, the child is the growing point of the family. If you cannot understand social institutions until you realise that they have their roots in the needs of the family, neither can you understand the functions of the family without realising that they have their roots in the needs of the child.

The one-room house need not mean literally a house of only one room. The same physical conditions may be generated in a house of two, or three or

more rooms, but what I intend to express is the conditions of over-crowding that normally occur in the one and two-room houses of the poor in the city and in the country. Functionally, the two-room house may be really a one-room house, since the one room is frequently the living and sleeping room, and the extra room is not used except for ceremonial purposes and storage. We need not, therefore, be too narrow in our interpretation of the one room as one room. It is the conditions that would normally occur when the one room is put to all the rich uses of a house that I mean to indicate and to argue from. Nor need we be too arbitrary in our ideas of what is due to the residents of one room. I have seen one-room houses that fulfilled perfectly all the primary uses of a house; but I have rarely seen this where the family exceeded three people, a father, mother and child, or three people of one sex. If there is anything fundamentally important in the early separation of the sexes, and we can hardly doubt that there is, then the one-room house has a very limited range of good work in any community. And conditions should not be such that people are forced into houses where moral abominations are justified by a theory of economic necessity.

Why do we choose the one-room child for the focus of our observation? The reason is easily given. It is because he is an extreme, but a real case. If you are to have a house at all, you cannot have much less than one room. This is the housing limit for a family. The one-room house is a serious factor in our present city development. Of the causes that have led to the production of the one-room house I say nothing, nor of the ideals that impel to the continuation and extension of it, nor of the many proposals for its abolition. At the moment, these points do not concern us. Our primary interest is the natural history of life in one room. And, of course, when I say life I mean the life of the family, not merely the life of the individual. For a long time or for a short time the one-room house is with us. The census leaves no doubt on that point.

It is, I believe, true that in Scotland the percentage of one-room houses is greater than in England, and it is suggested that the reason is: *first,* that the Englishman has a higher conception of personal comfort, and *second,* that he is not afraid to demand what he wants, and *third,* that he gets it. I have no great confidence in the adequacy of these national generalities; but, whatever be the case in England, the one-room house is a very serious factor in the life of Scotland. Whatever housing reforms the immediate future may reveal, the one-room house is not going to disappear in a day, but in its disappearance the one-room child will play an effective part; for he is demanding more room; he is battering at the walls that he may have more space to breathe; he is clearing an area round his slum that he may have more light to see by; he is crying and dying in a constant warfare that he may compel his parents to provide for him more adequate conditions of life. This little creature of sensations and a future has got hold of the reins and is driving the family with all his force. He means to go where he can have a room of his own. It is difficult to discover anything extraordinary in his ambition.

As I do not much believe in abstractions, let us first steady our minds with a few concrete cases, not invented or constructed out of averages, but taken from an actual research. What I shall read is the record of things seen by competent people, who knew how to look at the facts and how to put the primary matters down on paper. They all had some experience in this class of observation, and the facts recorded are too precise to permit of great exaggeration even if there had been any natural tendency to exaggerate. The medical parts were done by scientific specialists, whose every day for years had been spent in the practice of exact observation.

(1) A house of one room; family of seven persons—one parent; 3 males, aged 18, 16, 8; 2 females, aged 20 and 13. The number of habitual occupants of the house, 5. Size of room 1,639 cubic feet. Of the 2 school children, 1 suffered from adenoids and enlarged tonsils, the

other had swollen neck glands; one flea-bitten but had clean hair.

The comment of the observer is: "A bad home. Woman twice married; second husband deserted her six or seven years ago, and she now keeps a bad house, in which much drinking and rioting goes on. Daughter on stage sends 10/- a week, son is out of work. A son in an institution. All as filthy as is the house. The food is irregular. Two children have had free dinners from school this and last winter; clothes were also given for one each time. The boy attends regularly. The woman is a hard drinker, and gets money in undesirable ways. Evidence from Police, School Charity, Headmistress, School Officers and Doctors."

(2) House of one room; one parent; one son of 25; one daughter of 14; father lives apart. The comments of the observer are: "The drinking capacity of this family cannot be too much emphasised. The parents can't agree and live apart, the man allowing 7/6 a week when girl is with mother, and 5/- when she comes to him. She is verminous, and very badly kept. Mother can't get charring, as she lives in so bad a neighbourhood, so means to move; at present she keeps other women's babies at 6d. a day each. Elder boy out of work, a tidy lad, reads in Free Library. House not so very untidy. Evidence from Police, Church, and Officer."

(3) House of one room; 2 parents; males aged 15, 11 and 6; female aged 13. In this family there were 4 wage earners. One boy and one girl sell newspapers. The boy suffers from enlarged tonsils and adenoids. Both boy and girl were flea-bitten. The comments of the observer are: "An intemperate pair. Husband only in irregular employment of late; has been locked up for neglect of children (who are regular at school) and an improvement in general condition is now noted. Free food and boots for three granted. Father has since been locked up for three months for assault on his wife and step-son. Two of the four surviving children (four being dead) add something to the weekly income, their respective ages being 15 and 13. Evidence from School Charity, Headmistress, Chief Constable, S.P.C.C. Branch, Factor, Doctors and Police Court."

(4) House of one room; both parents; boy aged 4; girl aged 6. The girl suffered from enlarged glands and had a hæmic murmur of the heart. The comments of the observer are: "Both husband and wife are given to drink, and separated at times. The two children, though delicate, are well kept. Evidence from Church, Club, Headmistress, Police and Doctors."

(5) House of one room; both parents; boy aged 4, girls aged 8 and 6. One girl suffered from chronic ear disease, enlarged tonsils and adenoids, enlarged glands, hair with nits, badly bitten. The other girl had enlarged glands, hair with nits and general pediculosis, badly bitten. The comments of the observer are: "Family of three children living with parents. Father earns good wage, but casually; mother earns a little. Does not keep her children nor house particularly well; neither are her children sent regularly to school. Evidence from Church, Employer, Headmistress, Police and Doctors."

But these, you may say, are somewhat crowded houses. Here is one with a single child:—

(6) House of one room. One parent; 1 girl aged 8. Comments of the observer are: "Very bad home, all sorts of visitors come and go. Woman drinks, and so do her friends. Child weakly, ill fed. Illegitimate baby. Very filthy house, atmosphere appalling; clothes hanging to dry from ceiling. Food and income and everything else very erratic. Widow gets a bad police report. Evidence from Police."

(7) House of one room. Both parents; 3 boys, aged 13, 12 and 3 weeks; 3 girls, aged 10, 7 and 2. Two boys at school, were found dull, irregular in their attendance, unclean, fearfully bitten and scratched; one of them suffering from enlarged tonsils and adenoids, with heart disease. The girls, also dull and irregular in attendance, showed pediculosis of the hair. They were badly bitten and scratched; one had bronchitis and suffered from seborrhœa on the face and was also badly bitten. Comments of the observer are: "Both parents drink a good deal, and man twice convicted lately. Children attend a lot of church meetings, are delicate and irregularly and ill fed. Very irregular at school. Two boys earn 5/- and 7/6 a week. Very early marriage, 20 and 19. Used to be insured; have lost two children. Fairly tidy and clean, and children get baths. Evidence from Doctors, Schoolmaster, Police, Parish Sister, Club, Children's Employment."

Take two other examples:—

(8) House of one room; 2 adults, married; 2 step brothers aged 13 and 2. Comments of the observer are: "Model young couple living in one airy room cleanly kept, high up, taking in wife's father and brothers at meal times. Received coals and meal from Church. Evidence from Employer, Churches, Police and Doctors."

(9) House of one room; both parents; 2 boys, aged 13 and 11. One girl, aged 1. The comments of the observer are: "Living in miserable, cold attic. Husband, a slipper maker, locked up for six weeks, having neglected his family. (Since this visitor's report he has been in prison for stealing slipper material). Mother charring, but hard put to it. Free dinners, boots for two granted by School Committee; boys' clothes granted from special fund. Evidence from Employer, Schoolmaster and Charity."

These few excerpts from a record of facts should be enough to check our deductions and keep us from extreme

views. But here are two other cases of another kind from another city :—

This is a case of pulmonary tuberculosis. "Patient, a boy, aged 5, suffers from rickets in severe degree and has never been able to walk. He has a bad cough and spit, and so is probably a source of danger to the other members of the family. The house is of two rooms, and moderately dirty. The window was about one inch open. There are in the house the parents and eight children, the oldest 17, the youngest 3 weeks. There are three beds; the bedding is very scanty. In addition, there is a cot, in which the patient sleeps alone. The father has a fairly regular income. The rent is £9 a year. The parents have applied for the patient's admission to a home, but it was refused on the ground that the boy had phthisis."

In another case (a girl, age 3), "the environment and the circumstances generally are of the worst. The house, of one room, is situated in a gaunt and gloomy street, and is reached by an extremely filthy stair, upon which children are playing. The house itself is indescribably filthy and foul-smelling. A baby, male, aged 13 months, had died of whooping-cough a few days before my first visit. His case had been notified about two months before. The present patient, a pallid and weary child, has cough, with 'weak back' and 'congestion of the lungs.' The mother adds, with a strange mixture of apathy and tenderness, 'She won't trouble us long.' The occupants of this house were the parents, the sick child, and, until he died, the baby boy. Four older children are said to sleep with an aunt or grandmother; but, as she goes out to work, they spend the day at home playing on the stair. The window of the room is 3 inches open at the top. In a dark recess there is an apology for a bed; only a mattress and a few rags, those that were originally white and those that were always black being now of similar hue. The boy who died slept in a bed-chair, they said. Ashes, paper, and rubbish of all sorts litter the floor. The father is in regular employment; he earns from 22/- to 24/- a week, and keeps only 2/- for his own purposes. The rent is 9s. 3d. a month."

This study in the blackening of white is typical. Recently, a Recovery School child from Edinburgh screamed with terror when she was put into a bed with clean sheets. She had probably never seen a white sheet except around a dead body. It is certain that in the district she came from the terrors of death are visualised in white sheets. [*Etc.*]

The Development of Vision in Children.

By Edgar Browne, M.Ch. (Liverpool), F.R.C.S. (Edinburgh).

When compulsory education was established, everybody was in a hurry, and infant schools were organised as if they were merely a form of adult instruction, diluted but not different. Primary education was supposed to consist of the three R's, and everybody was supposed to be happy. Nobody seriously enquired if the three R's were good for babies.

But the foundation of the Child-Study Society is evidence that public opinion has undergone a great change, and the continuance of the activity of the Society indicates that there exists a healthy condition of discontent. Without discontent there is no improvement possible. You have done one essential thing—you have begun by the study of the child and have thereby provided the doom of the old idea which was the study (or imitation without study) of other systems of education already in use. That was an adaptation. What was needed and what further study will inevitably bring is revolution. We shall start from a new scientific foundation.

We shall begin by stating that education consists of teaching nothing in particular. It consists in watching the organs and faculties of the body and encouraging them in their natural growth, and seeing that they are brought to a state of perfection according to the capacity of the raw material, and sometimes it *is* raw material! Sometimes it is frightfully damaged by disease. Every organ and every faculty must be encouraged and made the most of, and stimulated. It must be coaxed, not driven; the natural capacity of the organ in particular must be studied. The rate of growth must be noted as far as possible in each individual, and disuse must be avoided as well as over stimulation. An organ that is not used may become useless, and an organ that is over-stimulated may be irrecoverably damaged.

The eye at birth is hypermetropic. This is not disease, but condition of growth. Children under favourable conditions may possibly attain the normal form at about twelve years of age, not before. School children over twelve examined in quantities are found to pass over from normal standard to short-sighted. This is certainly due to the use of books. During adolescence very strong tendency to grow worse, in girls more than boys. About age of twenty-three tendency to increase ceases. In all countries the statistics have shown the same results. Of course there are racial proclivities, constitutional conditions, unfavourable environment, but the main thing is always the same—prolonged work at books, maps, needlework and other civilised occupations. We may be said to have established a system of training for the production of short sight, which is continually increasing. Only from Sweden comes any gleam of encouragement. There the latest reports, for the last twenty years show that the percentage of short sight is decreasing, and this is attributed to the leaving of book learning and great attention to outdoor development of the body. The Swedes are ahead of us generally in physical culture.

We have just increased the stringency of the examination of vision in sailors. We are keenly anxious to get more men for the Navy and Mercantile Marine. We desire to rid ourselves of the Lascar and the dago. We say to our countrymen, "Come on board our ships, when you have finished your schooling. But we insist on your going to school. When you have made yourselves short-sighted, the Board of Trade will reject you." A perfectly logical position.

A short-sighted person is condemned to see badly, or to wear glasses, and, contrary to popular opinion, a short-sighted eye is not a strong eye; it is subject to many perilous changes in after life. I need not, however, waste time in supporting the proposition that short sight is an evil to everybody except the spectacle maker.

I would here direct your attention to a few physiological laws :—

(1) That no attitude or position that can be voluntarily assumed by the body will effect a permanent change unless it be long continued and frequently repeated. Very awkward attitudes are often assumed for a short time by children and adults without ill effects. Note, for instance, in the favourite amusement of bicycle riding. The man who rides in the evening for exercise does not spoil his bearing, but the professional or long-distance enthusiast is distinguished by the peculiar hunch of his shoulders and a curious indescribable change in his walk.

In this country churchgoers, whose kneeling is intermittent, do not suffer from their devotional exercises, but domestic servants, whose kneeling is more prolonged, are liable to an affection well known as housemaid's knee; the cobbler who sticks to his last acquires a malformation of the chest; and so on through a hundred occupations and handicrafts.

(2) That exercise of the muscles promotes their growth and nourishment; whereas a passive strain results in weakness and wasting. Everybody knows that rowing strengthens the muscles of the back and legs, whereas sitting at a desk weakens them.

(3) That in early life the processes of growth are perilously nearly allied to inflammation, and that the border line may be easily passed.

Two Hours' Play of a Four Years' Old Boy.

By J. J. Webber, B.A.

"Note first that the boy's explanation of his behaviour is given in words which partially describe his state of consciousness, and which enable us to achieve by sympathetic understanding, in the light of our own experience of similar situations, a fuller description of that state than his words actually convey."

"Consciousness may be likened to the surface of a spring of water which bubbles

up unceasingly from obscure invisible sources. The surface assumes at every moment new forms; some change rapidly, others slowly, but none persists stably; each detail of the form of the surface is constantly giving place to new ones, some slowly, others more rapidly."—*Psychology, the Study of Behaviour,* by Wm. McDougall, M.B., F.R.S.

At 10.40 my four-year-old came to me and said, "Shall we dig?" I assented, and we went forth. Prepared to abandon initiative and remain as neutral as possible, I had no sooner been armed with a trowel than he rushed off to a corner of the garden. "Look at those pretty flowers" was his cry as he pointed to a sage-bush. As he returned he pointed out some short sticks forming "a little fence," then "a pansy," and mentioned casually that the pea-sticks did not poke into his eye as he passed (a reference to an accident of three weeks ago). Digging then commenced, the earth being loaded into the toy cart, while I gave a minimum of help. Soon he shouted with a discoverer's glee, "fir-cone," picked up the cone, and apparently being reminded of "comb," tried to part his hair with it, and then threw it into his "house" (a large wooden packing-case, stood on one end) saying, "We'll keep that." By 10.58 he had filled and tipped the cart twice.

He now took a deep pan and a small garden fork, and in answer to enquiry, said, "I am going to make pepper, salt and mustard, and this is my mixing fork." In order to avoid any jarring note, I also began the manufacture of pepper, etc., but was reminded that I must not attempt it until I had done cart-loading. Hastily I filled and tipped the cart *once,* and was hurrying on with the pepper, etc., when the boy whose attention was, I thought, fully occupied with his task, remarked that two loads ought to be tipped first.

By 11.11, "pepper, salt and mustard" had been metamorphosed into "dinner," and this was soon considered as cooked, but suddenly he started to get "potatoes," picking up rounded stones and placing them in the cart. The intermittent nature of this work, and the different objects which he noticed as he searched the ground set his tongue going. He had been forbidden some days before, to break off the small twigs on the pea-sticks, but as he was busily occupied I unconsciously snapped off a twig. He immediately glanced up from his "potato" gathering and said, "Why do you break off those twigs?"

He chattered about the cool breeze, and the leaves on the tree; noticed a piece of glass, which he threw way, and a shell which he picked up and exhibited before placing in the "house," then having gathered 43 "potatoes" he became a buyer, and negotiated with an imaginary greengrocer. The "potatoes" were placed in a box in imitation of the household custom, and then it appeared that we kept "birds in cages," and this food was for the "dickies." I may mention that vegetables chopped small, in water, was his idea of birds' food; and a cupful of this "soup" placed in a disused bird-cage, which is hung outside the house, is his method of "trying to catch birds."

At 11.22 more potatoes were collected, and having noticed me counting the previous number, he invited me to count again. A pudding was now to be made, but the unsatisfactory nature of pebbles seemed to strike him, as they rattled into his small pail, and he threw them all out and began to pick up lumps of earth. In a moment he brought me a small brown withered bulb and said, "Look—a buttercup root!" It was sure enough Ranunculus acris, but before I had time to enquire about this alarming botanical erudition he ran into the house to show the find to his mother. He planted them it seems, and the flowers and leaves disappeared some weeks ago.

Continuing his search for "potatoes" he found little pears and placed them to cook on the "dinner." "There's a honey-bee," he says, as it flies past, and then enters into an explanation, with practical illustrations, of why as a rule

he comes in from the garden with dirty knees.

The lumps of earth are placed on the bottom of a box, and he goes to get an old knife " to cut up seeds for the dicky." 11.40 : The material being cut up is soon called " parsley," and then " suet "—the latter being sprinkled on the overdone " dinner," while the unused lumps of earth are put into the pail, which is carefully hung up in the " house."

His attention was now roving. Catching sight of his mother he asked for an apple or an orange, but hardly waiting for an answer, assured me that tail-boards of carts had to be made " strong," that somebody had to make Tommy (his wooden horse), and that Tommy had to eat his food " like this "—falling on his hands and knees and champing. The shell in the " house " now attracted his eye—" Could we find one without a hole in it."

At 11.45 he said, " Shall we dig now? " and emptied the " dinner " on to the ground, but he made no attempt to dig, and soon suggested that we should " live in the little house and eat potatoes." The pail containing the latter was upset, as he was admiring a lady-bird in the " house " at 11.51, so he set to work with the knife, flattening the small heap of spilt earth, and calling it " cement."

Looking at some small nails he recalled the pictures tacked up in his " house " a couple of months ago, and then invited me to play—the game to be " going down the path with the horse and cart—as our mother allows us to do this." At 12.8 after a turn at the aforesaid game, he talked of digging, but hearing the voice of the little boy in the next garden he did nothing. At 12.10 he asked for his wooden engine, on which he sat and shouted to the little boy. He filled the engine tender with earth at 12.14, but stopped to watch and talk to the other boy till 12.30, when he again suggested digging, but did nothing.

A shower then came on, and he covered the horse and cart with sacking, but stood the pail containing some earth out in the rain " to make mud," and when the rain stopped, made an unsuccessful appeal for tap-water. 12.34 : We walked the path again with Tommy and the engine, but this was soon abandoned, and at 12.45 he began picking leaves and passing them through the chinks of his " house " from the inside to the outside. While doing this he says gravely, without turning his head, " Skylark," and I then notice one singing in the distance.

Suggestions for Study and Practice.

Education in Sex. " Ideally, the writer believes that there should be some differentiation on the basis of age between those under and those over 14. But then arises the difficulty of making the younger pupils feel that they are being dealt with frankly. Few of those below this limit are likely to profit by much instruction. At least, we shall all agree that there is some inferior age or grade limit to be set for sex instruction, though there probably should be no inferior limit set to the truthful, but guarded, answering of honest spontaneous questions from the children. The only way to establish our limit intelligently is to start at the top of the school and work carefully down, surely not the reverse."—*W. A. Cook,* " The Problem of Sex Education, *" The Journal of Educational Psychology* (U.S.A.), May, 1913.

Scientific Tests and the Ordinary Teacher. " Those who have not used the tests themselves . . . [hold] the belief that it [" the Binet-Simon Measuring Scale of Intelligence "] is only of value in the hands of highly-trained experts. One must freely admit that the more highly-trained is the person who uses the scale, the closer are the results and the safer the diagnosis. And it is also true that only in the hands of a fairly-trained person can one rely absolutely upon the findings in borderline cases. On the other hand, it is equally true that even novices may use the Binet Scale, provided that they use it with ordinary good sense, and at the same time recognise their own lack

of experience, and do not seek for the finest results. Such a person may get information that is of exceeding value, and in many cases all that is needed. . . For rough estimates which are, nevertheless, of great interest, any person with good judgment can give the test and get results of immediate use and value."—*Dr. Henry H. Goddard,* "The Binet Tests and the Inexperienced Teacher," *The Training School* (U.S.A.), March, 1913.

The Value of Correcting Mistakes. "It is evident that in the performances tested [spelling and arithmetic] a marked improvement is produced by the correction of mistakes; and it is reasonable to assume that similar results would be obtained if other subjects of the curriculum were experimentally investigated in like manner. Ignorance of erroneous results is a barrier to progress; moreover, the effect may even be retrogressive. Whenever an error is repeated it is another step in the formation of an incorrect habit. This principle finds immediate application in the correction of homework. Merely to assign marks to the work is not sufficient; the erroneous parts should be corrected and the correct form made intensely prominent. Similarly, examination papers should be returned to students and the necessary points discussed, otherwise the errors are liable to be repeated."—*Stanley Watt, M.Sc.,* "The Correction of Errors," *Journal of Experimental Pedagogy,* June, 1913.

The Child Study Society and the Constituent Societies.

The Annual Conference, May 22nd-24th, 1913. This is the second time that Liverpool has invited students of child-nature to meet in conference within her gates; and in 1901 members of the B. C.-S. A. were warmly welcomed, and now in 1913 members of the Child-Study Society have met with a no less cordial reception. The wealth of arrangements made for the edification and amusement of those who were able to attend the conference exceeded all expectation. We had splendid audiences (ranging from 170 to 300 people) attracted from the neighbourhood, and the considerable increase in the membership of the Liverpool Child-Study Society may reasonably be expected as one result of the interest aroused.

On our arrival we each found awaiting us a booklet of tickets for every meeting, half of each ticket was to be retained by the owner, the other half to be given up if required. Also at the university was an ingeniously devised, and we think home-made, system of letter boxes, in which each visitor found any letters that might be awaiting him.

Programmes of every entertainment were printed, and a detailed list of the institutions and places of interest on view drawn up, we think, by the Director of Education for Liverpool, Mr. Legge, was furnished to every guest. In the case of one exhibition a more or less descriptive catalogue had been specially prepared.

The conference opened with a reception at the university by Sir Alfred Dale, the vice-chancellor, and Lady Dale. I was too much of a stranger to know "who was who," but the crowd was dense and the buzz continuous. After a short time we adjourned to a crowded lecture-room, where we listened to a spirited address from our able President, Sir James Crichton Browne, whose youthful enthusiasm persists and increases. His address was followed by a vote of thanks, proposed by Miss Hale, the principal of Edge Hill College, one of the friends of Child-Study in very early days, and seconded by the general secretary. The President's address will appear in our journal. His remarks on the Montessori method will have a special interest. Refreshments followed, after which came a programme of singing and dancing carried out by the students of the Day Training College, under the guidance of Principal Gettins himself. The songs were most sympathetically rendered, and the dancing and some humorous songs by "Soldiers Three," such as "Look, Neighbours, Look," sent us away in cheerful mood.

At 9.30 next morning the Council began to assemble. Sir J. Crichton Browne took the chair, and there were representatives from Birmingham, Cheltenham, Liverpool, Manchester, Tunbridge Wells and the newly-formed Society of the Hartlepools, the affiliation of which was one of the first items on the agenda. The capitation fee for the current year was fixed at 3d.; and the Council accepted with gratitude an invitation from Edinburgh for the conference in 1914. The subject suggested by the Edinburgh Society and adopted by the Council is *Experimental Work in Education.*

A lecture from Professor Campagnac on "Discipline and Freedom" followed. The professor spoke from notes, so it is feared that this address will not be available for our readers. He designated discipline as something commonly intended for others, freedom for ourselves; Plato

insisted that children should be habituated to certain types of conduct before reason is awake, and, said the lecturer, children and those no longer children should be made to do under compulsion what older, and stronger and possibly wiser people command. The mere fact of having measured one's power against a stronger and been beaten by it was a wholesome discipline; it was well that children should realise that there was in the world such a destiny, overmastering their personal and petty interests and desires, and moulding them to a plan which they had not conceived. He concluded with the words, "Discipline should be forced upon the young by men and women who had themselves lain low in the presence of a discipline more than human."

No discussion followed, but Dr. Mumford voiced the apparently general feeling of the audience when he thanked the lecturer for the high-toned thought and the "inspiration" of the address.

People then hurried away to the Walker Art Gallery, to be present at the opening by Sir J. Crichton Browne of an exhibition of original drawings by children in the elementary schools of Liverpool. This exhibition was due to the initiative of the Education Committee, and especially of Mr. Legge, and it may be said without exaggeration that a better exhibition, from the point of view of self-expression in children, has probably never been seen in this country. An instructive pamphlet describing the exhibition, and explaining its object in relation to Child-Study was issued to visitors.

In the short interval between lectures, there were other attractions, special schools to be visited (about twenty were thrown open) another exhibition of handwork, which we were not able to visit personally, the Children's Infirmary, and an Atlantic liner. Time and strength were entirely inadequate for all the pleasures that offered.

In the afternoon we gathered at Edge Hill College, for Mrs. Mumford's lecture on "The Religious Development of the Child in Early Childhood." It was a study of children by their mother. This address also was not written, and no idea of it could be given by short notes. Those who listened felt themselves within the sacred precincts of a real home, allowed to look on and listen to a mother and her children together making their way into the Holy of Holies. The stages of development through which a child passes were indicated: The dawn of the idea of God; next, self-expression, God is spoken to; love of God follows; and the culmination is willing service. With regard to the difficulty of answering children's questions, Mrs. Mumford recommended answering through story and parable, and said we must ourselves try to get simpler and clearer beliefs.

After Mrs. Mumford's lecture visitors were entertained by the students of Edge Hill College; they were taken first of all to a display of handwork, very varied and beautiful; then there were country dances, interspersed with part-singing followed by an impromptu speech from our President, in his happiest style. One of the students replied, and Miss Hale gracefully acknowledged the thanks and appreciation expressed.

In the evening came a lecture on the "Development of Vision," by Dr. Edgar Browne, who showed how the eye developed from infancy to adult life, and the dangers to which it was subjected by unwise treatment. Unfortunately time did not suffice for him to get to the constructive part of his lecture, when he would have suggested remedial treatment. Perhaps we may have the part which which was not delivered in some future number of the journal. After the conclusion of his lecture, and a charming speech and expression of thanks from Sir James Crichton Browne, came an entertainment by the Everton Village Choir, conducted by Mr. Edwards, for which we are again indebted to Mr. Legge. The children gave us five part-songs and three solos, which were much appreciated. After this the general secretary thanked the children for their pleasant music, and took the opportunity of expressing to the promoters of this very enjoyable conference the keen appreciation of the delegates and visitors for all that had been done for their pleasure.

The writer of this report was not able to be present at Dr. Leslie Mackenzie's lecture on Saturday morning. Mr. Legge was in the chair, and proposed a vote of thanks to the lecturer. This lecture brought the conference to a conclusion. There is no lack of child-lovers in Liverpool, and therefore, Child-Study has a hopeful future in that great centre of vitality.—*Miss Mary Louch* (Hon. Gen. Sec.)

The Cheltenham Society.—"In November, Dr. Cunningham Affleck gave a lecture on 'Greek and Roman Child-Study.' Having described the Greek systems of education at length, he contrasted them with the Roman. The genius of the Greek was love of the beautiful, and the genius of the Roman was empire. Roman life was practical; Greek life aesthetic. The Roman was the harder and less sympathetic parent. The lecturer concluded by remarking that the more we studied the education of ancient times the stronger became the conviction that in many ways the Greeks and the Romans must be our patterns and models."—*C.L.C. Magazine.*

Lecture List for 1913-14 (as far as at present known):—October, 1913, Lady Gomme, *Children's Singing Games.* November, 1913, Miss F. M. Baird, *The Montessori Method* (exact title not settled). February 1914, C. H. King, Esq., *Defence of Present Elementary Education.* March, 1914, Dr. Walter Jordan—*Miss F. M. Baird.*

The Halifax Society.—The session just closed

was most satisfactory from every point of view. The average attendance was good, the lectures were highly appreciated, the enthusiasm of the members showed no abatement, and the treasurer reported a good balance in hand. A series of talks to mothers in conjunction with the Workers' Educational Association was organised, and the favourable reports have induced the Child Study Society to make arrangements to continue the experiment next winter.

Lecture List, 1913-14: Sept. 26th, Professor Findlay, M.A. (Manchester University), *New Aspects of Educational Reform: An Address to Teachers and Citizens.* Oct. 1st, T. H. Pears, M.A. (the Psychological Laboratory, University of Manchester), *The Doctrine of Formal Training and the Results of Recent Experiments.* Oct. 15th, A member of Association for the Permanent Care of the Feeble Minded: An Address. Nov. 12th, Dr. Percy Nunn (London Day Training College). Nov. 26th, Jas. Shelley, Esq., M.A., *The Philosophical and Sociological Significance of Handwork in Elementary Education.* Dec .11th (Thursday, Miss Dora Walford, B.Sc. (Leeds Day Training College), *Craftsmanship and the Social Order.* Jan. 7th, E. G. A. Holmes, Esq., M.A. (late Chief Inspector Board of Education), *Some Aspects of the Montessori System.* Jan. 21st, Rev. P. Gough, M.A., *Methods of Education in Old Japan.* Feb. 4th, A Member of the Eugenics Society, *Eugenics as a Factor in Education.—Mr. J. Arrowsmith.*

The Hartlepools and District Society.—On May 1st a very interesting lecture was given by Dr. now Prof. P. Sandiford, on The Inheritance of Physical and Mental Traits. The lecturer succeeded in awakening a good deal of interest in this subject. Some days after a bookseller in the town asked the question, "Has someone been lecturing on Heredity?"

On June 11th Miss Marie Shedlock visited the town for the first time, and gave a charming lecture on "The Art of Story Telling." There was a very large audience. Here again tangible results followed, for some of Miss Shedlock's suggestions have been adopted with satisfactory results.

A series of lectures is being arranged for alternate months of the coming winter. During the intervening months discussions will take place on the previous lecture.

The President of the Society is Alderman M. H. Horsley, J.P., Councillor W. Edgar is the treasurer, and the delegates to the Council are Miss L. C. Brew, M.A., Miss E. Manley, L.L.A., and Mr. A. T. Prentice.

Mr. Arnold T. Prentice.

The London Society.—The London Society endeavour each year to arrange for a visit to an institution where practical demonstration is given of the object of the Society, "The scientific study of the mental and physical condition of children and of educational methods, etc." On Saturday, June 7th, nearly two hundred of the members, at the invitation of Dr. and Mrs. Kimmins, visited the Heritage Schools of Arts and Crafts for Crippled Boys and Girls, at Chorley, Sussex, where the education and training of the physically defective is carried out under the most favourable conditions. The healthy and charming situation of the schools, on high moorland overlooking the weald of Sussex must be of inestimable benefit to these poor little cripples taken from the slums of our great cities.

Lecture List, 1913-1914.—Oct. 9th, Cyril Burt, M.A. (Psychologist to L.C.C.), *Mental Differences Between the Sexes of School Children.* Oct. 30th, Professor Walter Rippman, M.A., *Development of Child Speech;* Chairman, H. Holman, M.A. Nov. 13th, Dr. Marion Hunter Vaughan, *The Care of Children under School Age.* Nov. 27th, Joint Meeting with the Froebel Society, Discussion on *The Educational and Psychological Aspects of the Training of Children before School Age.—Mr. J. W. Durrie Mulford.*

The Tunbridge Wells Society.—On Monday, June 2nd, the Child-Study Society met in the beautiful garden of the "White House," by the kind invitation of Mr. and Mrs. Pontifex, to hear the report of its delegate, Mr. Punton Smith, who had attended the annual conference of the C.-S.S. held this year in Liverpool.—*Miss G. Edwards.*

Notices and News.

The Liverpool Conference.—Some of the lesser details, as well as the greater elements, in the arrangements at Liverpool, are worthy of note for future conferences, e.g., the exhibition of children's drawings and handwork, and the little book of tickets of admission for each of the events; but it is a pity that copies of the programme were not sent out early and to every branch.

We much regret that Mrs. Mumford and Professor Campagnac have been unable to write out their addresses at the conference for publication in our journal.

A Translator of Russian, who will work for nothing, is wanted to review a Russian educational paper which is sent to us. It has its name in four languages on the front page, and the English of it is *School and Life.* Who will volunteer?

More Montessori.—There is a very interesting paper on "The Montessori Method," by Miss Julian, principal of the L.C.C. Avery Hill Training College, in *Education* for June 13th. This should be compared with that by "M or N" (Miss E. R. Murray?) in the *Journal of Education* for June.

A Reviewer for Music Publications is wanted for our Journal, and the Editor will be glad to hear at

once from some one willing to serve, as there is work waiting to be done. Terms:—the gratitude of our readers.

Mr. Winch's articles on "Binet's Mental Tests" ought to increase the sale of *Child-Study*, and will do so if only our members will take a little trouble to make known the fact of their appearance. Will all Hon. Secs. see that the fact is publicly announced at the meetings of the Child-Study Societies? Let us all do what we can.

Child Study in Cape Town.—At a meeting of The Cape Division of the South African Teachers' Association, held on August 9th, the President (Mr. E. O. Vaughan, Principal of the East End Public School) said:—"One wishes that it were possible to secure departmental grants towards the purchase of such journals as Stanley Hall's 'Pedagogical Seminary,' and the journal of the English Child-Study Society." The speech is very fully reported in the *Cape Times*, which gives over four columns to it; and the *Cape Argus* devotes its principal leader to it, and expresses the hope that the association "will devote its annual meetings to the exposition and discussion of scientific investigations conducted by its own members during the preceding year."

Mr. Vaughan has written to the Editor of CHILD-STUDY for information about our Society.

Our Next Annual Conference is to be held at Edinburgh, and the subject for discussion is to be *Experimental Work in Education*.

Reviews.

City of Westminster Health Society, Eighth Annual Report, 1912. Office: St. George's Baths, Buckingham Palace Road, London, S.W.

Some valuable information and guidance on "Infant Visiting" and "Medical Inspection for Children under School Age" is contained in this interesting report.

The Demonstration School Record, No. II. Edited by Professor FINDLAY. Pp. xxxiii., 283. University Press, Manchester. Price 5/- net.

The purpose of this volume is to "display in as much detail as space will permit the daily programme of the school" (Fielden Demonstration School, Manchester University). Contents: "Corporate life; work and motives for working; general review of the school pursuits; humanities; Class III. (age 9-10), syllabus in detail; an illustration in history teaching method; arts and crafts; handwriting; reading, grammar and composition; English literature; singing; modern languages; natural science; mathematics; method in arithmetic; elementary plane geometry; examples of scholars' work; three months' work with Montessori material.

The articles are by various members of the staff, and the whole is a most interesting and suggestive contribution to the study and practice of school experiments.

Child Mind. By B. DUMVILLE, M.A., F.C.P. Pp. ii., 214. W. B. CLIVE. Price, 2/6.

This book "is intended to be merely an introduction to the subject of Education Psychology . . . for use by students in training colleges, by candidate preparing for professional examinations . . . and by young teachers generally." Contents: The need of a study of psychology; the nervous system; sensation, association and perception; perception and observation; imagination and ideation; instinct and habit; the development of instinct and habit; stages of child development; fatigue and its treatment; memory and formal training; treatment of backward and precocious children. There are questions at the end of each chapter.

This is a first-rate book for beginners, and is based on the most recent writers on educational psychology.

Certificate Hygiene. Edited by Rev. A. W. PARRY, M.A., B.Sc., Pp. 113. W. B. CLIVE. Price, 1/6.

"This work is mainly made up of material taken from" three other books, and its object "is to provide a concise account" of Hygiene to cover "the syllabus . . . for the Acting Teachers' Certificate Examination in 1914 and subsequent years." Nothing more need be said of it.

Light Woodwork. By W. G. ALDERTON and J. T. BAILY. Pp. 128. Edward Arnold. Price, 2/6 net.

"The scheme is an attempt to show how Light Woodwork may be taught in the classroom, and how the practical work may be correlated with other subjects, especially with arithmetic, drawing and composition." It is especially designed for "older scholars . . . in rural districts." Contents: Introductory models; correlated lessons; lessons from the house; notes on tools, sharpening and equipment.

This is a very suggestive, helpful and well-illustrated book.

The Posture of School Children. By JESSIE H. BANCROFT. Pp. xii., 327. The Macmillan Co., New York.

The special purpose of this book is to deal with "the correct development and contours of spine, chest, shoulders and other main segments, as well as their relation to each other in the upright position. . . Educators have long recognised that provision must be made for counteracting the detrimental influence of school furniture and sedentary occupations on the postural development of pupils. To aid both home and school in these matters is the object of this book."

A well-illustrated and thorough book on a special point in physical training.

Child-Study.

The Journal of the Child-Study Society.

Vol. VI.—No. 7. NOVEMBER, 1913.

Editorial Notes.

The L.C.C. and Child-Study by Teachers.—There appears to be some danger that the L.C.C. may take steps which will cause teachers' efforts in the direction of child-study to be so "cribbed, cabined and confined" as to lead to the ending of them altogether. We trust that this is very far from their intentions, but it seems to us by no means far from the consequences of the recommendations of their Educational Adviser, if these be put into action.

A head mistress who had carried out some tests on mentally defective children wished to publish the results, and asked for permission to use the name of her school in the book. The matter was thereupon referred to the Educational Adviser, and he made a report to the following effect.

The results of any such experiments must be submitted to the Education Committee before publication. If they be found entirely satisfactory permission to publish and to mention the author's official position under the L.C.C. might be granted. But it might be necessary that further experiments should be conducted under the supervision of the Council's Psychologist, or other officer. In this case (it seems) the Council would publish, giving full credit to the teacher who initiated the work. In some instances it might be found that the experiments ought not to have been carried out, or that the publication of the results is inadvisable.

The Council's Psychologist also reported on the matter and said that, in his opinion, "psychological investigations commonly require the use of methods of procedure with which the untained investigator is, as a rule, unfamiliar." Hence there is need of expert assistance. Applications for such help should be left to come from the teachers, who should be told that they can have it. In all cases the results of teachers' experiments should be examined and tested by him (the Psychologist) before permission to publish was given.

We hope that the only part of the two reports which will be adopted and acted upon is that part of the Psychologist's which refers to teachers asking for and receiving his assistance when they "freely and spontaneously" desire it. All else is dangerous and destructive.

The scope and function of experiments and investigations by teachers may, and generally should, be quite different from that of the trained and expert psychologist. The former is more purely pedagogical, the latter more purely scientific. We cannot go into detail here, but Drs. Claparéde, Goddard and Thorndike have dealt with the matter, and have urged teachers to make experiments and investigations on certain lines. Such educate the teacher in his profession, and provide materials for the psychologist.

We suggest that the best thing the L.C.C. can do is to get their experts to draw up a memorandum setting forth the kind of work in child-study which teachers can do, and the best methods for doing it. All liberty and all encouragement should be given to all teachers in work which is so valuable and vital to their progress and success.

Binet's Mental Tests; What they are, and what we can do with them. I.

By W. H. Winch, M.A.

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Their Origin. There is, I suppose, no psychologist in the world to-day who is not acquainted with them (Binet's Tests); there are few who have not tried them. And not only psychologists; for many doctors of medicine, particularly among those in the service of Educational Authorities, have also in actual practice adopted them. And lastly—we ought to be ashamed to say lastly—educationists, administrators, inspectors, and teachers of method have begun seriously to consider their uses and importance. How has all this come about?

First of all, there is the man of genius, for whom I have not the slightest intention of trying to account. He was a Frenchman of the Sorbonne—Paris may still boast itself *foyer des idées*. The Americans, the Germans, and finally, the English are using the results of Binet's genius and directing them to practical issues. The French of France are not, generally speaking; though the French-speaking Belgians and the French-speaking Swiss are doing so.

I am told that motor-cars showed a similar inception, and a similar practical development outside their birthplace. Mental tests for children, like motor-cars, depended for their beginning upon original ideas, and France has first place. She had the man of capacity; and he was a university professor with leisure to think, so Binet's Mental Tests came into being. So much for the man, though that is little enough. I do not explain him, nor try to explain him. Genius is hard to account for. I should agree, for example, with the man who said that he could have written Shakespeare's plays if he had the mind to, and leave it at that.

Their Value to Doctors. The Tests have been themselves tested — a very necessary proceeding for all tests — and, despite some faults, have very generally been accepted by psychologists. But how came doctors of medicine to take up the Tests? In the terms of the advertisement agents, the Tests to them supplied a long-felt want. Medical officers of health and education, I believe, have been, and at present still are the only persons who have statutory authority to consign mentally defective children to special classes. Obviously, a series of tests which claimed to, and, indeed, actually did select defectives, on the whole, satisfactorily, was indeed a gift from the psychologist to the doctor.

Here was something definite, something tangible, something that apparently anyone could use for diagnostic purposes, something by means of which ignorant magistrates might be silenced. It was all very well to talk about nerves and brain-centres, *positively* to the vulgar or *speculatively* among themselves; the leaders of scientific thought knew full well that hypothetical brain physiology had never given any practical direction, because, as McDougall pointed out many years ago in his little book "Physiological Psychology," the psychology was always in front of it, and was known better than the physiology.

Indeed, the latter was largely a derivative, a series of inferences from the psychology towards which, later on, it turned round with an air of instruction, and told it a thing or two. (Those who care to read a long discussion of these issues will find it in an article of mine entiled "Physiological or Psychological" in *Mind*, April, 1910). Medical men were forced to use these and similar tests as a way of complying with statutory obligations which their own science was not in a position to cope with.

Their Value to Educationists. Now as to the educationists. The explanation of their interest is a much more difficult and a much more complicated matter. I know there are people who tell us that it is the growth of the scientific spirit

which accounts for all things of this kind. Such an explanation is easy, but it is false and misleading. There is—civilization has rendered them possible—a small, a very small highly educated class in every community which has the scientific spirit in application to human affairs. That is granted. It is not a new class; but it is larger than it used to be. But to assert in face of modern developments, either of religion, industry, amusements or of political government, that there is any general growth of the scientific spirit is a patent absurdity.

Still, somehow, there *is* a new departure in education, there *is* a beginning of the application of science, there *is* definitely a feeble birth of the scientific attitude, though, like the baby in "Midshipman Easy," it is a very little one. But its opponents will not think it less reprehensible on account of its small size. Let us hear what they say about it. Fortunately their arguments can easily be summed up, though not so easily dismissed. *Non possumus* they declaim in varying phrasing, but with equal conviction, however varied the expression. One cannot be scientific about man at all: that is what they say. At any rate, they go on, one can't be scientific about children. Such is the assertion. In one breath they say that children are incalculable, and in the next, that they, and they alone, know what children can and will do. This may seem an exaggeration, but I was asked—not very long ago—by a prominent political educationist if I could not tell whether children were of normal intellect or not, merely by inspecting them. He thought less of me when I said I could not, and said that he knew headmasters who could. I bowed and said nothing; it was a competition into which I did not care to enter.

Now there is, of course, an element of truth even in this *bêtise*. There *are* grades of intelligence, or perhaps I had better say, of non-intelligence, which bear the stamp of their incapacity upon their faces and upon their forms. There are other grades of intelligence which are associated with an open brow, a meaning look, a frame instinct with responsiveness. There are no difficulties in the rough diagnosis of cases of this kind, and everyone of us, every day of our lives, does make useful and successful judgments, both of men and women, as well as of children, which are based upon criteria of this sort. So far there is truth in the contention that we do not require mental tests, we can diagnose by inspection.

Classification by Tests. But let me now put a practical question. Suppose we take any considerable group of normal children, in how many cases could we feel any confidence in a diagnosis by inspection, unless, of course, confidence were our most striking personal characteristic? What do teachers do when a child, new to their own schools, seeks admission? They ask questions and set tests with a view to placing the child properly. I am assuming, of course, that they are not required to put the newcomer, say, in room C, because that's the only class-room where there is a vacant place.

I repeat, the teachers ask pedagogical questions and judge of the child's capacity by his failure or success in answering them. Now I emphatically wish to guard myself against asserting that such tests are of no use. They are of considerable value; but they have one extremely serious drawback, especially in England to-day, for schools have differentiated in curriculum so much that unless one has a detailed knowledge of the curriculum of a particular school, one cannot assert that, for certain, a child must have had an opportunity of securing any particular item of knowledge. And if he has not, the pedagogical examination completely fails.

And quite apart from such cases as these, there is, of course, the admission of children, especially in infant-schools, who have never been to school before. In what classes are they to be placed? Tests of pedagogical acquisition are, obviously, quite out of the question. What ought to be done in such cases as these? First of

all, let us ask what is done now. Well, there *is* such a thing as classification by age, and age is of course a rough guide, a guide by no means so misleading in infant-schools as it is later on in school life. Still, even in infant-schools, it is by no means satisfactory.

And there is also a classification by size. I can almost hear the accents of indignant repudiation bursting from some of my readers. But I can tell them that there are cases (yes, a tolerable number) in which boys have been put up or put down because they are big or because they are small, and therefore will look about right in their classes. Yes, I know quite well that big dullards cannot for ever be kept down amongst the little ones.

We shall, I hope, have subnormal classes for these later on, where whatever capacity they have may be developed. But I am not now talking of defectives and subnormals; I am speaking of the grading of normal children; and I assert that grading by age, or by size, or even by pedagogical proficiency has serious drawbacks. I advance as a substitute a grading by mental age or mental proficiency, as tested psychologically.

Binet's the Best. And Binet's Tests, at least those for young children, are (subject to certain modifications to render them suitable to English children, and a few psychological modifications of some importance) the best; indeed, they are the only series of tests of world-wide usage; and, on the basis of my own researches I can confidently recommend them for young children, that is to say, for children of from three to eight years of age. But some tests have to be omitted, others changed in substance for English children and others changed in place somewhat.

These tests will enable teachers of young children to find out accurately just what class the child is fitted to enter on the ground of its natural capacity.

I asked a little while ago, What is done now? Well, there is another practice fairly common, not altogether a bad one, which needs to be mentioned: "Miss A—, try this child for a week or two and see if he will do for you," says the mistress, in an encouraging tone, as one presenting a possible treasure. Miss A—, with acquiescence, but without enthusiasm, takes him. Does she try him? If he is lucky enough to "pick up" where the others are, so to speak, he gets through. If not, she has usually no difficulty in proving that he won't do for her.

She may be right; she may be wrong; but there is no scientific court of appeal; that is my contention. Ah! the inspector; yes, I had forgotten. But the teachers alone in any inspectorial district number many hundreds—four figures, not three. And the children, they are as the sand on the sea-shore, a multitude that no man can number. There can be no proper grading of school children if it is to depend upon the already overworked activities of a few highly-placed officials. The teachers, under guidance, if necessary, must take a hand. To enable them to do it has been a prime motive of my researches and lectures of the last eight years. And I am going in these articles to point out to them how they *can* take a hand successfully.

The School "Standards." But first I must remove a misapprehension. One of my critics, for I am glad to say my lectures were attended by some who came, not to scoff, but to object, put the case to me thus: "Do you think teachers will welcome a re-imposition of standards?" This is my answer, my considered answer: No, I do not think so, though they *may* find, with standards gone, and no scientific substitute available, that age is left standing alone, so to speak, the sole surviving criterion. They *may* find that standards were safeguards to the teacher against a classification even worse.

But I repeat, I do not think so. What *were* the standards? When one has known a thing well, one often forgets what it really was. So I do not apologize for writing out what they were. They were ideals of pedagogical efficiency to be reached year by year on the assumption

that all elementary schools contained children of approximately equal capacity. And the curious thing was that the enthusiasm and capacity of some teachers in "poor" schools produced results which (not investigated psychologically but accepted pedagogically) went to support and, indeed, in some cases more than to support, such an assumption.

In 1905 I began an investigation into the differences in capacity between elementary school children of different classes, and it is now accepted doctrine among psychologists and others that such differences in capacity do, on the average, exist between the children of different social classes. My investigation was published in outline in the "Journal of Experimental Pedagogy," Numbers 1 and 2, London, 1910.

The psychological investigation of the problem is a safeguard that the old standards will never reappear. Personally, I have no quarrel with definite ideals of education; but I want them to be suitable to children of varied capacities, and I want, above all, to know that the children have been graded beforehand upon a basis of their real capacity. If a psychological examination to enable the teachers to grade their children is a reimposition of the old standards, then I want them back. But, of course, the contention is absurd. An examination which helps the teacher, and an examination which, irrespective of the capacity of the children, coerces the teacher, are two very different things.

The question of pedagogical examination is another question altogether; it is a matter of educational administration. What I am concerned with now is a psychological question. And psychological tests are valuable in so far as they *do not test the teacher's work*; they are framed to test the mental capacity of the children; they are not framed to test whether Miss A or Miss B. has taught the children to read and write.

New Methods versus Old. There is one further great outstanding issue which Mental Tests, properly applied, will enable us to solve. Year by year, almost day by day in these times, persons come forward and tell us educationists that we are all wrong; they promise us most extraordinary results if we will only adopt their methods of discipline and teaching. They tell us—Madam Montessori, I think, among the number—that children can be taught to read and write at a much earlier age than we now think desirable. Perhaps they can; the problems are problems of experimental pedagogy. I shall not deal with them now.

But they go further and tell us that the children by their methods will be made so much more intelligent—their general intelligence will be much increased. Now this is where our Mental Tests come in. If it is true that general intelligence is increased by the methods advocated, then, age for age, the children taught by them should be in advance of others not so taught. And by the application of Mental Tests the hypothesis can be tested.

I am not antagonistic to the persons who call upon us every day to make a new heaven and a new earth in our schools. We all need their stimulus; we all need their criticism; we all need their practical suggestions. But their methods must be tested by sound scientific examination before we ask teachers to adopt them.

There is something rather pathetic in the spectacle, so frequently presented to us nowadays, of elderly teachers who have learnt certain methods and practised them all their lives and are now called upon, at short notice, to change their whole stock-in-trade and work on other lines. They can't always do it and the result is often less than nothing. They could achieve something in their old way: they cannot handle the new ways at all. Are we, therefore, to say that there shall be no advance, no change? By no means.

But educationists and teachers are entitled, before they are thrust forward into what is new, to have good evidence that the new is really better than the old. Does it do what is claimed for it? Does it really produce a better result than the old? We

cannot tell unless we apply—scientifically and systematically apply—a series of Mental Tests in order to find out.

Scope of these Articles. In this introductory article I have tried o show the value of and need for Mental Tests; in succeeding articles I shall show what happens when they are applied to school-children of different types. Binet's Tests will be used for young children, and full information will be given as to their application. And the modifications needed to make them suitable for English children will be indicated.

If teachers will endeavour to use them and to understand them, they will help forward the day when England will really come into possession of a real science of education.

Child=Study and Pathology.

II.

By Sir James Crichton-Browne, M.D., D.Sc., LL.D., F.R.S.

Presidential Address, Liverpool, May, 1913.

Founding on these observations it has been argued that the decline in the death-rate from pulmonary tuberculosis has been due to the increasing number of people who are tubercular, and the inference would be that a certain dose of tubercle in childhood, say in the glands, is a very good thing and a protection against phthisis and the more serious forms of tuberculosis in after life. I cannot subscribe to that theory. It may be that a time will come when we shall have a tuberculin, sure and certain, the injection of which into an infant will confer upon it lifelong immunity against all forms of tuberculosis, just as adequate vaccination confers immunity from small pox, but that time is not yet, and in the meantime it seems to me in the highest degree objectionable to make use of the bane as an antidote to itself, especially in the case of a bane so uncertain in its action as that of tubercle. Our policy is to keep our infants and children clear of tubercle. They should not be touched by the unclean thing, but should by all possible means and at all ages, be protected against infection human or bovine. We must keep constantly in view the influence of hereditary predisposition, the risk of exposure in situations where the seed may be sown, and the danger of environmental conditions favourable to the growth and propagation of the seed.

The infant starts free from tubercle. It was shown in Paris, by Pirgnet's test, that in infants of one year old and less a positive reaction showing the presence of tubercle was given, in only 2 per cent., while in the period of from seven to fifteen years it reached 82 per cent. Now in the children in urban districts from one year old and upwards it has been conclusively shown by a number of independent investigations, notably by the most recent one that of Dr. Noel Palon in Glasgow, an enormous proportion are insufficiently or improperly fed, and it is these children who contract tubercle. Sound nourishment in early life is, in my judgment, a much surer and safer protection against tubercle than any tubercular infection, natural or artificial. We must strengthen the power of resistance of the infant or child to the invasion of the bacillus, and in that relation feeding is a question of paramount importance.

The dietetics of infancy and childhood is a subject well deserving the attention of the Child-Study Society. It has been much discussed and written about, but is still in need of elucidation. Dr. Hector Cameron, in a very instructive paper on "The Uses and Abuses of Proprietary Foods in Infant Feeding," has just told us that amongst the poor in London an excess of sugar in the food of infants is by far the most common cause of dyspepsia and its attendant evils amongst them. It is quite common, he says, to find that a heaped teaspoonful of cane sugar is added to each of ten feeds per diem for an infant whose weight totals eight or ten pounds. This amount is equivalent

weight for weight to the consumption by an adult weighing ten stone, of about two pounds of pure cane sugar in the course of the day.

There is one set of pathological conditions in the child that has not yet aroused the attention it deserves, I mean functional derangements and organic diseases of the heart. We hear daily of sudden deaths from heart-failure, and although that phrase, especially in the mouth of a Coroner's Jury, no doubt covers a multitude of shortcomings in many organs, it is yet clear that cardiac troubles of one kind and another are on the increase amongst us in these agitating days, and that a considerable proportion of these have their origin in early life.

There has as yet been no systematic inquiry into the incidence, causes, character, degree and prognosis of heart disease during childhood, but definite returns by Medical Inspectors received from a few areas, give an approximate idea of its prevalence, and it appears that about one per cent. of school children suffer from it. There is no return from Liverpool, but I find that at Wallasey 1.2 per cent. of the school children, boys and girls, were proved by examination to have recognisable heart disease.

The diagnosis of heart disease in children is not so difficult as that of pulmonary tuberculosis, but unless the examination is made with great care, cases may be missed, and it seems probable that further investigation will disclose a larger proportion of heart disease in children than the figures quoted indicate; a much larger proportion if there are included under heart disease cases of dilatation in boys, probably temporary, although not always so, and induced by recent over exertion.

Congenital heart disease due to imperfect structure of the organ is mostly hereditary. Freidberg mentions three sons of one father, two by his first wife, and one by his second, who presented its characteristic symptoms, murmur and cyanosis, or livid blueness of complexion, and Strehler reports the case of a rachitic woman who bore in succession five cyanotic children. The victims of this heart malformation permitting communication between the two sides of the organ so that the blue venous blood of the right side mingles with red arterial blood of the left, which cannot be overlooked, not infrequently live for some years after infancy, and so find their way into schools, and thus we note that in Staffordshire there were noted fourteen development defects among 409 heart cases in school entrants, and in Monmouthshire as many as thirteen congenital lesions, among seventy-two cases. The condition, however, frequently has a fatal termination in childhood and is irremediable, and so has only a pathetic interest in relation to Child-Study.

Very serious are the Child-Study aspects of acquired organic and functional diseases of the heart. These are immediately fatal in many cases, and when not so they are disabling and distressing and shorten life. But they may be prevented and are amenable to treatment if taken in time, and their early detection is therefore of the utmost importance.

Organic heart diseases in children may be set up by acute infectious diseases such as influenza, diphtheria and scarlet fever, but their chief cause is rheumatism, which in an insidious form may play havoc before its presence is suspected, and it is for signs of rheumatism in children that a vigilant outlook should be kept. The clinical picture presented by organic heart disease in children is very different from that seen in the adult. In the latter growth is completed and cannot be interfered with, but in the former it is still going on and is liable to be checked.

Organic heart disease in children is a wasting disease. The child suffering from it is pale and anæmic, thin and emaciated, suffers from headaches and dyspepsia and from breathlessness and palpitation on exertion, and is brought to the hospital or the doctor, to be treated not for cardiac disorder, but for marasmus. Where the

severity of the lesion is not sufficient to prevent the completion of adolescence, the fully grown patient will sometimes be found to be well formed, but of diminutive build.

"Many young women who are of the 'petite' type," says Dr. Forsyth, "will be found to have had a constriction of the mitral valve in early youth." In such cases growth is stunted, but the heart is able to maintain the circulation through the small body. In other cases, growth continues in spite of the additional work thrown on the already embarassed heart, and so the circulation fails, and then we have the painful symptoms characteristic of heart disease in the adult, breathlessness, palpitation, congested lungs and swollen limbs.

Acquired organic heart disease is very rare indeed under three years of age; and rare until four or five, and after that it increases in frequency as life advances, and the important point to bear in mind in connection with it is that if the lesion is small and well compensated no indication of its existence may be given except on actual examination of the heart.

Functional diseases of the heart are comparatively frequent in older school children, and the most common of these is incompetency of the mitral valve, due to some dilatation of the heart muscles often associated with anæmia and that muscular flabbiness that depends on malnutrition, the tendency to it is increased at the time of puberty when the physiological strain on the system becomes greater. It is frequently induced by over exertion mental or bodily, and especially by an excessive indulgence in athletic exercises.

As we all know by practical experience, the heart is throughout life very responsive to our changing sensations, and especially to mental conditions that correspond with deep interest or emotional excitement, but in childhood its susceptibility to influences of that kind is vastly greater than in after life. The rate of heart-beat is then 100 instead of 75 per minute, and the nerves which accelerate or retard its action, are more sensitive than they afterwards become to reflexes associated with conscious states, and with states of activity of the visceral organs.

Very slight changes may therefore entail marked variations in the speed of the heart in children, and irregularities of the heart's action which in adults would create alarm have often in them no sinister meaning. But at the same time the boundary of physiological variation is very apt to be overstepped, under stress either mental or physical, and then we have dilatation or functional disease of the heart which, if trifled with, may pass over into organic disease. More especially is muscular fatigue responsible for this state of things. The discharge of impulses from the brain along the voluntary motor paths is propagated to the centre of the nerves that speed up the heart, and the chemical products of metabolism in the active muscles which are given off to the circulation are carried to the nerve centres, where they affect the cardiac nerves and also directly to the heart itself, which they stimulate.

The effects of the products of muscular metabolism may be seen in the fact that after prolonged or excessive muscular exertion the heart beat remains accelerated for a considerable period after the cessation of the work, especially in the untrained individual. Even in the healthy adult or trained adolescent, the strain of inordinate muscular effort may damage the cardiac machinery, causing dilatation and a train of evils, and in weakly and ill-nourished children such strain is doubly deleterious. Boys and girls too early put to laborious occupations not rarely develop functional heart disorders, sometimes aggravated in the case of the boys by the pernicious habit of cigarette smoking.

But it is, as I have said, rheumatism that is the main cause of serious heart troubles in childhood. Acute rheumatic fever, with its sudden onset and violent symptoms, cannot be overlooked, but sub-acute rheumatism may secretly work its way up to a fully developed heart lesion, unnoticed

even by a watchful mother. It is often the arrival of that lesion which must embitter and abbreviate life, and involve more or less industrial incapacity that directs attention to the apparently trifling symptoms by which it was ushered in. It is, therefore, eminently desirable that all parents and teachers should be taught to recognise the significance of the premonitory signs and first symptoms of rheumatism, so that appropriate treatment may be timeously adopted. Thus will much disability and misery be avoided.

Growing pains in a child should never be pooh-poohed, and when associated with a rise of temperature, call for immediate medical assistance. Sore throats and nose-bleedings must not be neglected. Nervous excitability and twitchings, or any approach to St. Vitus Dance, are full of warning. Erythematous rashes and nodules on the skin and pains in the joints or stitches in the side are often danger signals.

The Education Authority of Croydon, with wise forethought, has directed the preparation of a leaflet on rheumatism for the instruction of parents, which is to be distributed when thought necessary. It has also been arranged at Croydon that the attendance officers may use their discretion in keeping rheumatic children from school when they have aches and pains, if they are provided with one of these warning notices. It is to be hoped that the example of Croydon will be widely followed, and that either by means of such leaflets or by personal interviews school doctors and nurses will disseminate a knowledge of the harbingers of rheumatism in children.

In all the rheumatic affections of children, it is rest, timely rest, complete rest that is the first necessity in order that the heart may be safeguarded. Bed and blankets are the sovereign remedy, by a resort to which excellent results are obtained. Fresh air, warmth, nourishment, may in slight cases effect a cure, but medical guidance is always desirable, and in severe cases special medical treatment affords the best hope of recovery. It is to be remembered that even a loud murmur in the heart of a child does not mean an incurable case. Many serious lesions in the heart in such circumstances yield to appropriate treatment, but if that cannot be secured they end in permanent damage and dilatation. Even when that has occurred something may be done, compensation may be established, and if the sufferer can be safely conducted through the trying periods of puberty and adolescence and engaged in some suitable occupation, a fairly long and comfortable life may be anticipated.

Children of the rheumatic diathesis must always be closely supervised, so that any recurrence of rheumatic manifestations may be immediately noted. They should be protected against damp weather, especially in the autumn months when rheumatism is most prevalent, and should be liberally nourished. Children in whom the heart has been actually injured, and in whom compensation has not been fully established are not fitted for school life, but should be under medical treatment at home, but when adequate compensation has been attained, and the general health is good, education may be carried on in the ordinary way, always provided that physical exercises are carefully regulated, all risk of strain being avoided.

Rheumatism is responsible for some 2,600 deaths in England and Wales every year; heart disease for some 50,000 : a dismal toll which may, I believe, be considerably reduced when these maladies as affecting children are included in Child-Study, so that parents and teachers may be fully alive to their significance and ready to grapple with their beginnings.

Sir George Newman, who has done a great public service in directing attention to heart disease in school children, and in collecting information on the subject, has in connection with it reported a very interesting inquiry into the temperatures of school children carried out by Dr. May Williams (Assistant Medical Officer for Worcestershire). In the course of her

ordinary inspection, Dr. Williams noted the temperature of 1,000 children, in no way selected, but examined at routine work, together with a few re-examination children, aged 12 and 13 as leavers. The temperatures were always taken in the mouth.

The result of the examination showed that the large majority of children examined had temperatures above the normal. Dr. Williams states that among the entire 1,000 children, the maximum percentage is that of children exhibiting a temperature of 100° (18 per cent.), and the next two highest are those at 99.6° (12.7 per cent.), and 99.8° (13.1 per cent.). Only 13.5 per cent. of the children have temperatures below 99°, and 55.5 per cent. have temperatures not under 99.6°. Of the 1,000 children, 254 were not suspected of pulmonary tuberculosis, rheumatism or tonsilitis, but the remainder were either suspected or considered to be suffering from one of these affections.

Dr. Williams' facts are startling both as to the prevalence of tuberculosis, rheumatism, or tonsilitis, and as to the temperatures of the children not implicated in these affections. Assuming the accuracy of the instruments used, and that the observations were not made during some epidemic ailment, they point to a general rise of temperature in elementary school children. Further observations are urgently called for. [*Etc.*]

The Child of the One-Roomed House. II.

By W. Leslie Mackenzie, M.A., M.D., LL.D., F.R.C.P.E.,

Medical member of the Local Government Board for Scotland.

Let me here say that the one-room house has not everywhere the same significance. In the open country, or country village, the one-room is really not the only living-place. It is merely a place to repair to for meals and sleep, a point of outlook on unlimited space.

Except for a short time of each day, the children are not confined to the house, not even as much as they are confined to a room at school. It is at least possible for them to have healthy spaces to play in, sometimes trees to climb, fences to go through, woods to get lost in, hills to tumble down on, streams to fish in and wet their clothes in, rabbits to chase, dogs to fondle, birds to listen to, bushes to burn, stones to throw: in a word unending opportunities for activity without fear of the police. The quietest country boy, if he continued in the town his most ordinary behaviour in the country, would be up at the Police Court in twenty-four hours.

The one-room house of the country leaves a great deal to be desired, but it need not be the miserable refuge that the one-room of the industrial city so often is.

There are many classes of the one-room population. They are not all of the same grade nor of the same origin. In the towns there is a class due to the subsidence of certain elements of the other classes, and in the country, too, there are several classes. For instance, there are the dwellers in the rural single-room cottages, where the freedom of the surroundings is the equivalent of a larger dwelling, where living is easy and clean, and the neighbours are not too numerous. There one finds as good social results in the one-room house as in any other house. The ménage is small as a rule: two persons, or three.

But come into the mining quarters and the one-room house changes its character. There is overcrowding in spite of all that is said or done. The exactions of labour harden the custom of earlier ideals of comfort and cheapness acts as a fixer. In many places the mining population seems not yet entirely to have shaken off the moral traditions of serfdom, and seem contented with conditions of life that do not in the least correspond to the same wages in the cities. This is a problem by itself. But there are signs of change.

The children frequently do not seem to suffer much in nutrition or in vigour. They have as a rule plenty of food and

on the whole the open country more than makes up for the closed room. If you doubt this go through a Fifeshire mining village when the schools have broken loose, and you will not again raise the question. There are, of course, poor specimens, but the general truth is what I say. Let it be remembered that where the labour is active and strenuous, the parents must be strong and the children have a good biological start. But even to this the exceptions are many.

The theoretical one-room house is not the same as the actual one-room house. It is easy enough to find in the clean country, where life is slow, or in the small town, where life is less pressed, specimens of the successful one-room house where all the decencies of life can be, within limits, honoured and where character does not seriously suffer from want of room. But take the one-room house as it is actually used. For instance, take the case of a one-room house, with a patient suffering from advanced tuberculosis of the lungs. There are two other adults, married; two grown up children, a son and a daughter, and three young children. They all live and sleep in the one room. Can you say that in such a case the one-room house is a name for anything but human degradation, failure to realise the finer issues of daily life, anything but a beastlike establishment that ought to be wiped out of existence?

We may deduce certain propositions from the masses of recorded observations of one-room houses in the great cities :

1. *The one-room family cannot feed the one-room child properly.* Given home circumstances like those I have detailed, how shall it be possible for a child to have so many regular and regulated meals a day? And if he has not these, how shall he grow? If the mother is not efficient, and if the father is out working, how and when will the child be fed?

It is not exactly a question of mere want of money. That, in some cases, may be a cause of the neglect. But, in many cases, it is not, and yet the neglect is quite as great as if there were no money available. It is bad management. It is bad organisation. It is want of interest in the child, want of interest in his character, in his attainments, in his future, in his present. The child is an incident of the mother's and father's life, not an object of care and anxious nurture.

But where the ethical life is so low down, the physical life is also low down, and you will not readily get a well-fed child there if he has had to rely on his home for his feeding. Which is cause, which is effect, is a matter for speculative analysis. But low physical potential and low ethical potential go together. Regular feeding in a civilised family is a late acquisition of the race, which no longer relies on the casual food to be hunted for by individuals in the open world of nature, but must rely on organisation, on forethought, on the correlated energies of tens of thousands of men and women if food is to be found at all.

The one-room house lies on the margin of possible life in the great city. The city is itself an organisation to protect the family from extinction. The one room is the last refuge of the civilised family threatened with extinction. The function of the house is to keep the child alive. But the one-room family sometimes fails even to keep the child alive, and always fails to exploit his powers to the full. But the home finds its instruments in the expansions of the city organisation, which, as it grows in specialisation, makes, on every economic level, a more and more adequate family life possible.

From this point of view, the city is a protective growth produced by the family instinct to secure survival, and, as the child must be at all costs kept alive, the city becomes the protective cradle of the new-born infant.

2. *The one-room family cannot clean or clothe a one-room child properly.* The conditions that lead to poor feeding lead also to insufficient clothing. Like food, clothing is always a function of interest in the child. Where the interest sinks to

zero, the clothing is allowed to deteriorate into rags. The child's body is also neglected. It is never systematically washed. Indeed, the one-room child never enjoys system at any point of its life history.

In the one-room family one fundamental principle of Froebel is always realised: the child is allowed to do as it wishes. But the garden for its energies is filled with dirty human beings, not with the clean things of nature; a hot-bed of foul human smells, not a flower-bed of beautiful colours and scents. The child is a casual from the cradle, and probably the rocking of the cradle is the only rhythm it has known at the hands of a parent. But in many a one-room house there is no space for a cradle, and even the earliest sleep is often the sleep of a poisoned brain, not of natural fatigue.

3. *The one-room family cannot procure sleep enough for the one-room child.* That is certain. Wherever adults and children occupy the same room, the children suffer necessarily. For the periodicities of the adult person are quite different from the periodicities of the child. The adult needs less sleep; he has more resistance. He has greater capacity to alter his surroundings and defend himself from injuries of every kind, bad air, dirt, noise. The infant is more susceptible and yet weaker. He is more vulnerable, yet he has less power to take himself away from bad conditions. He has to rely on others for everything: food, clothes, washing, sleep. He sleeps at different hours from his older brothers and sisters and they, from the father and mother.

The movements of sleep are never the same in any two persons, and, where more than one lies in the same bed, there is always some nervous unrest. In the sleeping condition, probably the nervous system is even more susceptible to suggestion than in the waking state, where the tension (the "threshold value") is higher. We may say on general grounds that, when several people of different ages house all night together in one room, rest for the child is a blank impossibility. But without rest of the nervous system, the whole body suffers. The whole nutrition in subtle ways is upset and perverted.

But the sleep problem is complex. A child's small body often needs more warmth than the empty bed affords. A member of the Edinburgh Child-Study Society, who has done much holiday home work, told me, when I read this part to her, that on one occasion a boy protested against being placed in a bed alone, saying, "I canna sleep in this bed; I'm wanting my mother, and Jeannie and my twa aunties." I do not say the child was right in his judgment of the correct number; but his opinion about his sensations was final, and that opinion must be scientifically interpreted. Education in habits of sleep is as important as it is in habits of self-discipline, of which, indeed, it forms a part.

4. *The one-room family cannot educate the one-room child.* We may go much further than this. No family, whatever the number of the rooms in the house, can educate any kind of child. This is not a fact limited to the poor. It is universally true. Among the poor, however, it is so obvious that no one can deny it. But if you think of it, you will find it equally undeniable for the upper wealthy, the middle wealthy, and lower wealthy of every grade. Why should it be so?

The question is a matter for a separate paper. But briefly, the answer is that education, as we understand it, in the more recent stages of the civilisation of the western world, is really the foreshortening of the whole period of developmental adaptation to a very complex life and this adaptation has to be accomplished within a few years if the child is to survive as an approximately fit citizen.

But the life he must learn is far too complex to be learned in the family, however efficient. No one father and mother, be they never so learned, can give the atmosphere or the organisation needed to open up the mind of the child to the many influences he will have to work among in later life. In fact it takes at least a hun-

dred thousand people to bring up one boy. You need the care of the city ; you need companionship ; you need the subtle stimulus of the child's contemporary. This no family of physiological father and mother can ever provide.

We need not, therefore, blame the one room alone for an inefficiency that is common to every house of two parents and a child. But in the one-room house the conditions are so marked that they are unmistakable. The evil effects are so strong that the problem of education becomes infinitely more difficult. Even the little that an efficient family on the higher level can do and do well, the one-room family cannot do at all or does badly.

The first impulse of every person that enters a one-room overcrowded with children is to clear the whole lot out into the open air. But the impulse usually goes no further. It dies in pity. The visitor for a short time utters wild revolutionary ideas about the disgrace of such places, the thriftlessness of the occupants, the advisability of drowning the mothers, the absolute necessity for flogging the fathers, and many things equally gratifying to the destructive emotions and equally futile in their results.

One thing he always forgets, namely, that he has not asked himself the question : What share have I had in producing these conditions? As time goes on the visitor gets indifferent, or the current of pity goes under the surface and there generates a set despair that paralyses effort and kills the desire of good, leaving, perhaps, a trace of satisfaction that he is not like " those people." " It is sweet, when on the great sea the winds trouble its waters, to behold from land another's deep distress; not that it is a pleasure and delight that any should be afflicted, but because it is sweet to see from what evils you are yourself exempt."

Perhaps if we realise steadily that no one family of three people is fit to do what the child requires if he is to become a citizen, we shall be less ready to despair of the possibilities of social organisation. The cool science of the facts will help us to develop what is possible whether it be the ultimate best or not. It is certain that education of any but the worst kind is not possible in the ordinary one-room house I have described to you. As a child-study society (and all society is a child-study society), we must look for the means of exploiting whatever elements of positive good we can find.

5. *The one-room house cannot become a home.* This is a hard saying, but I think it is, on the whole, true. The few exceptions to it are striking enough rather to confirm than to contradict the proposition. But let us go further. Even the two and three-roomed houses are rarely homes in the true sense except for moments now and again. These are the moments we wish to make permanent.

If the one-room house were always the one-room house of the country places or small towns, there would be less to say against it; for there you will often find the one room occupied by clean and clean-minded, strong people, who can make the houses subserve the uses of life without sacrificing character or putting the moral life of their children in danger of degradation. But even in these towns and villages the conditions are accepted by the better man and woman simply out of necessity.

In one instance I found a fine type of young miner washing himself after coming from his shift. The one-room house was a very poor one. It had no presses, or cupboards, or conveniences of any kind ; there was nothing but the bare four walls, and of these one was very damp, being built against the earth at the back. He was a man of fine colour of face and vigour of body. He apologised for the house, saying that he meant to get a better as soon as it was possible. He added, " We are just a young married couple," and indicated that this would serve until better accommodation was available. There were as yet no children.

But these two are beginning life in the glory of youth and health and strength. He looked a young Viking, confident of success. His blue eyes, his delicate pink

and white complexion, his fair hair, his good teeth, all spoke of a fine racial inheritance. Such as he achieve a good life almost anywhere; but the day of stress and unemployment will come. The ways of the house will get too hard for the young mother. The necessities of nurture for one, for two, for three, for five, or more children will test father and mother to the last recesses of their moral powers; but there is something to hope from the fact that the one-room house is accepted only as the beginning.

In a Scottish colliery village I went one day into a house of one room. The inmates were a widow, her daughter aged sixteen, her son a little younger. The daughter had been working at the pit head since the day after she was fourteen. She was a handsome strong girl, and equal to the load that fate had placed upon her. The one-room house was admirably kept. No fault could be found with it from the standpoint of the personal efficiency of the inmates.

But the girl communicated to one of us that she had advised her mother that they should now get a house of two rooms at least. The day of her womanhood had in this way announced itself, and the light of a greater interest than her mother's home was dawning in her aspect. It is not always that the deeper impulses speak in this imperative way to the budding woman; but the voice when it is heard cannot be mistaken for any other. [*Etc.*]

Tests bearing on the Early Ideas of Number and Quantity.

By Dr. Decroly and Mlle. Degand.
Translated and Abridged by
T. G. Tibbey, B.A.

Since it is of interest to know exactly, and through many observations, at what age the child has different ideas bearing upon the numbers one, two, three, four, etc., and at what age he is able to answer exactly when one asks him "How many?" and when he has an exact idea of the terms many, few, less, more, etc., we have sought out a series of tests to use with children of two, three, four and five years. But that any useful conclusions may be drawn it will be necessary to apply these tests to a large number of children; we have already begun to do this, but it is necessary that others should bring also their contribution to this task and help thus to trace another step in this shadowy domain of the psychology of children.

The following are the general conditions of the experiments.

A. The child should be examined in a pleasant and familiar place, by a person known to him, so that he may be under quite normal conditions.

B. The experiments should be made as far as possible in the morning.

C. The thoughts expressed during the experiments should be carefully noted.

D. The experimenter should furnish himself beforehand with all the necessary material.

Test 1.—Show to the child in turn one finger of each hand, then two of right and one of left, then two of each, then three of right with one, two and three of left, and so on until the five fingers of each hand are being shown, and each time get the child to show the same; each should be repeated two or three times, as though in play. But it is useless to insist when the first attempts fail.

Test 2.—Show the child a number of objects, one two, three four, etc., in turn; leave them before him and get him to show a similar number.

Each has before him, we will say, a heap of twelve nuts. You take one and put it before you, and ask the child to do the same, not mentioning the number, but saying such as "Do like that with the nuts." Then do the same with two three, four, etc. Beginning from three some complication enters, for you are able to group the larger numbers either in a line or as forming some design.

We have tried this test upon several children and have already noted how the group arranged in a symmetrical form is

more exactly reproduced than the group placed in a line. When the results have been obtained with nuts the tests can be repeated with other easily counted objects as biscuits, beans, etc., noting the time the child takes over the action. It is important to observe the different reactions during this test, to determine exactly from what number he no longer reproduces the group shown and in what manner he expresses it. Thus one child of 3 years 10 months imitated well groups of one, two, three, and also four when arranged symmetrically, but failed when they were arranged in a straight line. He gave then five, six, etc., but always more than three.

Test 3.—Show one, two, three, etc., things and ask the child to show the same number of fingers.

Note the manner in which the child adapts himself to this test, whether he understands immediately what is required, how many times the instructions have to be repeated, and the time he takes to get to work. Thus J— (3 years 10 months) understood after the second order, and could show the same number of fingers up to four objects, whilst M— (3 years 8 months) could not understand what was required and always showed one finger.

Test 4.—Show a number of fingers and let the child show the same number of things—nuts, beads, etc.

It appears that this test is easier to understand than the preceding; the number of fingers shown should not be successive, but mingled, e.g., 2, 1, 4, 3, etc.

Test 5.—Strike in a regular rhythm (two strokes per second) on a table, glass, the hands, etc., whilst the child turns away. Then ask him to reproduce what he heard.

Show the child the glass and say, "See the glass—I am going to strike it whilst you turn round, so that you cannot see me. You will hear what I do and then when I have finished you can do the same."

Test 6.—Make the child repeat a movement a certain number of times.

Tell him you are going to move his arms or legs and you want him to do himself what you have done for him. Bandage his eyes and then bend his lower arm upon the upper, raise his arm to the head, lift his leg, bend his body, in each case one, two, three, four times, etc., and then ask him to do the same.

Test 7.—Touch his face or hand a certain number of times whilst his eyes are closed; then ask him to do the same.

Test 8.—Make the child repeat the numbers from one to ten.

Tell the child you are going to count and ask him to listen. Then count 1, 2; 1, 2, 3; 1, 2, 3, 4, etc., until the whole series has been repeated. Some children have already learnt these numbers; others produce some interesting results. Thus A. ($3\frac{1}{2}$ years) could repeat numbers up to 4, but at 5 she said she did not know the name; for 1, 2, 3, 4, 5, 6 she said, 1, 2, 3, 4, 6; for the next series, 1, 2, 3, 4, 7, and after that gave the first four numbers of the last one mentioned. Another child of 3 never repeated anything more than the last two figures heard.

Test 9.—Show the child a group of 2, 3, 4, etc., things and ask him how many, without letting him count.

Test 10.—Strike a table, glass, box, etc., whilst the child turns away and ask him how many blows he heard.

Test 11.—Make the child count things, pointing with the finger.

Put ten nuts, etc., before the child and tell him to count them, putting his finger on each.

Test 12.—Make the child take the number of things necessary for one, two, three, etc., persons, starting with two.

Place twelve nuts before him, saying, "You see those nuts; well, take one for yourself and one for me." Note how he acts. Then putting the nuts back, say, "Now take two for yourself and two for me." Afterwards for 3, or 4, for each of two persons, and then do similarly for 3, 4, etc., persons.

Test 13.—Make the child divide groups of objects into two, three or four parts.

J— (3 years 8 months) could divide even

numbers into two equal parts well; of three chocolates he kept two and gave one; of five beans he gave three and kept two, then noticing the difference, said it would not do and put them together again.

Test 14.—To test the comprehension of the terms "much" or "many."

Give to the child a number of, say, thirty nuts, or sweets, and then say "I should like to have many nuts, etc. Will you give me many?"

A., aged 3½ years, first asked if two were desired; when the request for many was repeated, suggested three, and on the next repetition offered all.

Test 15.—To test the comprehension of the terms few, more, less.

Make five heaps of nuts, or sweets, etc., two containing about thirty, the others about ten. Then talk to the child in this fashion: "There we have some heaps of nuts, etc. Look at them. Show me a heap where there are many; now another where there are many; now show me one where there are few," etc.

Then take a large and a small heap and get the child to compare them. "Here are two heaps. Show me the one that has more—are you sure? Now show me the one that has less." Repeat the test in various forms with other things.

Test 16.—To see if the child can cut a piece of paper (preferably coloured, about the size of half a sheet of exercise paper), a stick of chocolate, or a long biscuit, etc., into two, three or four parts.

J. (3 years 8 months) could cut the paper quite well into two or four parts and thought this easy, but when told to cut it into three he evidently did not understand, and cut it again into four, and was satisfied with the result.

Test 17.—To see if the child can thread beads in a definite orderly manner, such as 2 red, 2 blue, etc.; 3 red, 3 blue, etc.; 2 red, 2 blue, 2 yellow, etc.; 3 red, 2 blue, etc.; 2 yellow, 3 red, 2 blue, etc., and combinations of 4, 4; 3, 4 and 2, etc.

This is in some measure complicated by the factor of colour recognition; moreover it is somewhat long and should not be tried on a day when the child has had other tests.

It is probable that certain modifications will have to be made in these tests, such as in the order, in the style of the questions, etc., but that can only be determined by experiment. Such as they are, we have reason to believe that they will furnish some interesting observations relative to the ideas of quantity possessed by children who have either not at all, or only to some slight degree, come under the influence of definite teaching.

Note.—The above is from "L'Ecole Nationale" (Brussels). The tests are such as could be applied by any parent or lover of children, and would reveal much of interest, and of value in understanding and guiding the child's development. The writers are particularly desirous of receiving accounts of such experiments; these may be sent to Dr. Decroly, Rue du Wossegot 4, Uccle, Bruxelles, or to T. G. Tibbey, 36, Drakefell Road, New Cross, S.E.

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

2. *The Means of Habituating the Child to Obedience from his Earliest Years.* Are there any means of avoiding all these scenes and disturbances? Yes: One need only have recourse to his own authority and habit. *Obedience is a habit,* and it is of the utmost importance that it should be established from infancy. In fact, the other habits that I have discussed in the previous chapters are only of secondary importance, since one and all may be broken or acquired by means of obedience.

To acquire obedience, it is necessary to follow the laws which govern the formation of all habits. *It must be begun early.* "If the child," says Locke, "has been accustomed to have his way in everything from the time he is a baby in long clothes, can we be surprised that he wants to go on doing so still, and will struggle to get

his own way, once he is breeched? He has done as he liked with his nurse before he could walk or talk; he has ruled his parents from the moment he could lisp a few words, and now that he has grown up, now that he is older and more intelligent," is it likely that he, a big boy ten years old, will give up the privileges that he enjoyed in his cradle "Try this treatment with a dog, a horse or any other animal, and you will discover that it is no easy matter to cure them of bad habits which they adopted when young." This is truer still of man: he is more self-willed than the lower animals, especially as he feels his powers increase from year to year: if obedience is not obtained in childhood, it is afterwards too late.

But where are we to begin, for the baby does not, as yet, understand the spoken word? We must begin by gesture and voice. A young child is affected by the *tone of voice* "just as a horse feels the stimulus of whip or bridle." A pleasant, encouraging tone braces the hearer to action, a severe tone, accompanied by a commanding gesture, restrains a child from doing what he should not do, and this power of the voice is one means "of developing a child's readiness to obey."

Repetition alike of gesture and of words are needed at this age. I am holding a little girl of nine or ten month old on my knees. She wants the knife I have in my hand. I say to her *"Baby mustn't touch,"* and move her hand away. She makes a second attempt, I repeat my prohibition and move her hand away again. She keeps quiet a moment longer. A third time she looks at the shining blade and begins to move her hand towards it. *"Baby mustn't touch"* I repeat, in the same tone, and looking steadily at her. Then she looks at me almost as an intelligent human being, who would say, "You really want me not to?" At the same time, she does not move her hand further, I continue to look at her steadily, and she does not touch the forbidden object. Thus repetition has made her understand.

Her mother acts likewise. When the child puts something harmful in her mouth her mother says to her, *"Give it me, baby."* Immediately, as if impelled by some hidden spring, baby half opens her mouth, displaying to view the object on the tip of her tongue for her mother to take it. She did not invent this little trick the first time, but every time she got hold of something that she ought not to have, her mother said to her, "Give it me," and put her finger to her mouth. The child associated the sign and the movement, she heard the words and thus learnt to obey. Little by little, action explained the words; a day will come when the words will explain the action.

Repetition alone is not enough; *we must exact obedience.* Listen to Mme. de Saussure: "I will give you a penal code for children of two years old which may save them from much more severe penalties in the future. For disobedience due to *forgetfulness,* prevent the continuance of the act by good-temperedly renewing the prohibition. For a more *wilful* act of disobedience, seriously warn the child that, if he does it again, he will be absolutely prevented from disobeying. For a second *deliberate* act of disobedience, carry out your threat by silently taking such means as will render disobedience impossible." If need be, better a smart tap than outcries, threats and reproaches later on.

3. *The Right Way to Command.* When the child can talk and understands what is said, a word ought to be sufficient to make him obey. It is no longer necessary to repeat the same command two or three times, or to deprive him of the means of disobeying. But in order that this word may have the desired effect, it must be given as a command to be obeyed, and this is what few parents realise.

We will suppose that three or four children have just come home from school. The whole day long, they have been under restraint, and their minds have been actively at work; their brains are tired, they need exercise, change and amusement. Am I to expect them to remain silent and quiet? It would be just as unreasonable if I were bidden to go

without food. Children need action and noise in their daily life. Commands must be only such as are *possible.* (A wise saying of La Pallice, but ignored by most people !)

A child is playing quietly and disturbing no one. Why should I interfere in his play? It would be better for me to be silent than to bid him stop play. Another time he is busy in some little occupation which pleases him. Shall I tell him to do something else? The work which he gives himself is best for him. He is quite happy, why should I disturb him? Over-management is a bad thing for the temper. Never disturb a child except in case of absolute necessity. Commands must be *only such as are necessary.*

But, you will tell me, so many commands *are* necessary? At every moment of the day, the restless child may be breaking something or doing himself some mischief. Merely to keep the child out of harm's way, commands must be given over and over again. No, Sir, there is no need for so many instructions, actual prevention is sufficient and indeed is the best, for it is surer, and puts the child out of reach of temptation. You don't want him to break some precious thing? Very well, put it out of his way. You want to avoid accidents? Make them impossible by whatever precautions you can. It is true that by means such as these the child will not learn to obey, but he will not learn to disobey, which is something gained.

"Remember these six things well," said a mother to her little girl, "you must not, etc., etc." And the little girl said to herself, "I shall never remember all that. Whatever I do, I shall be sure to forget something and do something wrong, and then I shall be punished." Forgetfulness, discouragement, want of attention are the consequences of a multiplicity of rules, hence commands must be *few in number.*

Suggestions for Study and Practice.

Classification by the Binet Test. "Individual tests were made of each of the 201 children [in a West Side School in New York City] in the grades above the first year [over seven years old]. The Binet test was used for the purpose of sorting the children into three groups: the normal, or those testing within two years of their chronological age; the backward, or those testing between two and three years younger than their chronological age; and the feeble-minded, or those testing more than three years younger than their chronological age...The number of children belonging to each group was as follows: Normal children 144 (71.64 per cent.), Backward children 25 (12.44 per cent.), Feeble-minded children 32 (15.92 per cent.)"—*Elizabeth A. Irwin,* "A Study of the Feeble-minded in a West Side School," *The Training School* (U.S.A.), September, 1913.

Physical Exercises for Babies. "Dr. Montessori recognises the value of jumping and climbing for children. It seems incredible, but it is nevertheless true, that a mother asked a friend of mine whether she thought a child *should be allowed to jump.* Jumping is, indeed, one of nature's best exercises for developing strength in the legs and judgment in co-ordinating movements. The eye, too, is trained in judging distances, and courage gradually develops. The child must be guarded at first, but if care is exercised, he will begin to jump well in his second year from at least one low step."—*Jennie B. Merrill, Ph.D.,* "Montessori Physical Exercise for your Children," *Magazine Bulletin* (U.S.A.), May, 1913.

Home Education by a Mother. "The first thing that every mother must realise is that the education of the body comes before the education of the mind. The outline that I give is based upon the assumption that your five-year-old is being trained in his habits of orderliness and regularity, helpfulness and unquestioning obedience...The little child should dress

himself, button or lace his shoes, hang up his clothing on the proper hooks, turn the covers of his bed to air, put away his playthings when he is through with them, run here and there to save his mother steps about the house. Such early training as this is the highest kind of discipline."—*Ella Frances Lynch*, "How can I Educate my Child at Home?" *Magazine Bulletin* (U.S.A.), August, 1913.

Notices and News.

Non-salaried Reviewers.—We are glad to say that a reviewer for the Russian journal has volunteered. Mrs. May Marsom has been good enough to undertake the work, and we are able to include first contribution in this number.

No one has yet offered to review the music publications which come to us. It is important that a competent musician and educationist should do this, as we want our reviews to be on a high level.

Our needs in this direction are constantly extending, and a reviewer for Hungarian journals is now required.

Mr. Winch's Articles on the Binet Tests.—The other articles will appear bi-monthly from now. We again urge our readers to make known the fact of their appearance as widely as possible, and especially among teachers.

Froebel Society Meetings.—Our London members may like to know of these. They are held in the College of Preceptors, Bloomsbury Square (close to the British Museum), and there is a charge of 6d. for admission for non-members to each lecture, or 3/6 for the course of eight lectures. No fees are taken at the doors, and tickets must be applied for (a stamped addressed envelope being enclosed) from Miss Temple Orme, LL.D., 4, Bloomsbury Square, W.C.

Tuesday, Nov. 4th, *The Meaning and Function of Play,* by Walter Wood, M.A.; Thursday, Nov. 27th, Joint Meeting with Child-Study Society, for discussion on *The Training of Children before School Age*; Tuesday, Dec. 2nd, *Formal Sense Training,* by Professor Spearman; Chairman, Dr. Langdon-Down; Thursday, Jan. 8th (at the University of London), *The Place of Reading and Writing in Kindergartens and Infant Schools;* Tuesday, Jan. 27th, *The Importance of Imagination in Education,* by Dr. Greville Macdonald; Chairman, Mr. Arthur Burrell, M.A.; Tuesday, Feb. 24th, *The Importance of Expression,* by Mr. Ebenezer Cooke; Chairman, Mr. H. Holman, M.A.; Tuesday, March 31st, *Nature Study for Young Children,* by Miss Hibbert Ware.

Reviews.

Ambidextrie :—étude expérimentale et critique. By Varia Kipiani, 36, Rue Neuve, Bruxelles. 104 pp. and 28 illustrations. Price 3fr. 50c.

Mlle. Kipiani has for some time past been making a careful study of ambidextry under the direction of Dr. Ioteylko of the Faculté Internationale de Pédologie and this small book is the result. The treatment is nothing if not thorough, and Mlle. Kipiani has certainly written a very strong appeal for the greater use of the left hand and one which all interested in the subject should see. She not only claims that the left hand should be employed equally with the right in drawing and writing, but also, in order to avoid that well-known fatiguing movement of the eye (to which Javal first called attention), when it passes from the end of one line to the beginning of the next, she urges that every alternate line should be written mirror fashion. And she claims that in the early stages of writing this can be quite easily taught—she herself has taught it; and further, that former ambidextral schemes have failed because attempts have been made to have similar work done by both hands. To remedy this she proposes that the right hand page should be written by the right hand, alternate lines being written from left to right and from right to left, whilst similarly the left hand would write on the left hand page. Each hand would follow its natural slope, from right to left with right hand and *vice versa* with left, whilst she urges that the pen or pencil should not be tightly held, but should rest easily between the index and the middle fingers of each hand.

It is all very enthusiastic and often suggestive; yet there still lingers in the present writer's mind the question as to whether the extra advantages quite compensate for the extra work involved.

L'Intermédiare des Educateurs. Geneva. 2fr. per annum.

This little monthly of 16 pp. comes from the Institut J. J. Rousseau, Geneva, of which it serves as the organ. Its further purpose is sufficiently indicated by its title; each number contains a notice, with portrait, of some well-known European educator, a short article upon some educational problem, and some questions put by contributors, to be answered in the next issue.

Le Pædologium, No. 1. 5frs. per annum. 69, Rue de la Culture, Brussels.

Not the least important outcome of the International Congress on Child Study at Brussels in 1911 was the establishment of an International Faculty of Paidology there, due to the energy and initiative of Dr. J. Ioteyko, one of the most remarkable women in European education. "Le Pædologium" is its quarterly bulletin. This first issue contains a portrait of its founder, an outline of the work proposed to be done, a statement of its need, and

a discussion on the relation of the psychology of the adult and the child.

Bulletin de l'Education Morale de la Jeunnesse. 5, Avenue du Général Tripier. 16 pp. November, 1912—July, 1913. *L'Union Morale.* Hachette et Cie. 64 pp. October, 1912—January, 1913. 3fr. 50c. per annum.

These two are evidence of the keen interest being taken in moral education in France—the "Bulletin," now in its sixth year, being devoted more directly to children, and, as is known to our readers, mainly from the parents' point of view. "L'Union Morale" is a new and more ambitious publication, being the quarterly organ of the newly established French League for Moral Education, itself the outcome of the International Congress held at the Hague. The first number is a fanfare to the world in general—an account of the opening ceremony and the discourses delivered, a list of members, and quite a formidable display of rules. The second issue contains an announcement of prizes offered for a Manual of Moral Education and various articles appropriate to the subject, *e.g.*, on the moral lesson in the primary school, on the teaching of kindness, etc. Notable among these is one by F. J. Gould, the well-known lecturer on moral education.

Eugénique, Nos. 1-5. Baillière et Fils, Paris. 1fr. 50c.

Here again is the organ of a new society, the French Eugenics Society, the formation of which, as in the case of L'Union Morale, derives not a little of its inspiration from England. The first four numbers are bound together as one volume (72 pp.) which contains, in addition to the usual lengthy list of rules, without which no French society is complete, and accounts of the inaugural meetings, an interesting article on the relation between Eugenics and diet and another with some striking statistical diagrams on Depopulation and Eugenics. The author of this latter, M. Lucien March, contributes a notable article to the next issue on Eugenic Education; he is but one of the many notable men, the connection of whom with this new organisation points to a very general recognition of the dangers of depopulation in France.

School and Life. A Russian weekly educational paper.

The full title of the paper is "School and Life—one indivisible whole." It has on the front page the likeness of Pirogoff, a Russian educationist. The price is 6 roubles or 12s. a year. Elementary teachers may pay on the instalment plan. Now and then it gives a supplement in booklet form, some of which contain a reprint of lectures on "School Management," delivered by Professor Paulsen at the Berlin University, translated into Russian by Engelhardt.

The contents may be roughly divided into two sections:—(1) *The greater*: Local educational news of every kind, vacancies in schools, number of applications, government arrangements, new syllabuses of study, reports of school exhibitions, school conferences, holiday courses for teachers, and current educational literature. (2) *The lesser*: educational articles dealing with child study or reports of educational work in other lands, as for instance:—"Open Air Schools and Colonies in France"; "Hygiene in Italian Schools"; "Handwork in History, from the German"; "The Value of Statistics in School"; "The Proper Choice of a Career"; and "The Aims of Elementary Science."

A few of the articles are on Child Study lines, as for instance:—Processes of assimilation; The study of physiognomy as an index to a child's understanding; The angle of vision in handwriting; A plea for co-education; Discipline in school.

The Joyous Book of Singing Games. By John Hornby. Pp. xii., 140. E. J. Arnold & Son. Price 2/6 net.

This book well deserves its title, and all who like to teach folk songs to children will be delighted with it. British, Danish, Dutch, French and German songs are included; the instructions for playing the games are well done; and the general get-up is excellent. The "Introduction" and "Hints to Collectors" are both interesting and helpful.

Young Delinquents. By Mary G. Barnett. Pp. xiv., 222. Messrs. Methuen. Price 3/6 net.

This book is the outcome of a study of Reformatory and Industrial Schools, and is intended not for the expert but the general public. It deals with the following topics:—some causes of juvenile delinquency; the history of institutional treatment for juvenile offenders; the physical conditions of the delinquents and the medical care of the schools; the staff, and elementary and religious instruction in such schools; boys', and girls', reformatory and industrial schools; the work of industrial schools; the results of the training and the future of the schools; the report of the Departmental Committee of 1911.

All interested in these Schools will find this a very useful book of information.

Publications Received.—*The Journal of Education; The Educational Times; The Parents' Review; Child Life; School Hygiene; Experimental Pedagogy; Moral Education League Quarterly; L'Education Familiale; Types of Schools for Young Children,* by Miss E. E. Lawrence and Miss Rose Solomon, pp. 16, price 2d., The Froebel Society; *Problems in Eugenics* (Report of Proceedings, First International Conference, London, 1912); *National Association for The Feeble-Minded,* 17th Annual Report, to December, 1912; *Magazine Bulletin* (U.S.A.); *Educaçao* (Lisbon); *Archives de Psychologie* (Geneva).

Child-Study.

The Journal of the Child-Study Society.

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Child-Study and Pathology.

III.

By Sir James Crichton-Browne, M.D., D.Sc., LL.D., F.R.S.

Presidential Address, Liverpool, May, 1913.

A study of the pathology of childhood, as it exists around us to-day, of the abnormalities, defects and diseases which afflict so many of our little ones, to one or two of which I have been directing your attention, must, I think, give us pause in accepting without demur that Montessori system of education which is being so enthusiastically pressed upon us by a group of educators, and which must have secured the notice of all students of Child-Study. I am by no means blind to the attractive features of that system or to the remarkable nature of the work done by Dr. Montessori in her Children's Homes in Rome.

Animated by a tender and voluminous love of children or ample philo-progenitiveness, as the phrenologists would have called it; possessing in a large degree that personal magnetism that is an immeasurable but potent force in education, and endowed with medical knowledge, she has elaborated a system original perhaps in its combination of parts, but not so in the conception of any one of the parts of which it is composed, and has devised methods of teaching and apparatus that are novel and ingenious.

I highly appreciate Dr. Montessori's devoted labours in the cause of education, labours which will, I believe, have a stimulating and vivifying effect wherever they become known, but I cannot join in the indiscriminate adulation of her system that is going on, or believe that having regard to climate, racial and social conditions it can be beneficially translated in its entirety to our English soil. Useful hints we may derive from it, but in its wholeness we cannot accept it. I cannot admit that, as the ardent disciples of Montessori maintain, our present educational system in this country, with all its faults, is founded on distrust of the child, and is calculated to paralyse activity, arrest growth and substitute the movements of machinery for the subtle, occult, self-controlling processes of life.

Education must always be judged, although not paid, by results, and we have yet to wait for the results of the Montessori system as manifested in the character and achievements of the men and women who have had the benefit of it as children. Its immediate effects, when carried out under the eye of its inventor, on the children are obvious enough, but we have as yet no evidence that they are enduring. It would be edifying to learn whether the Montessori children show after a year or two in the schools to which they pass on, any marked superiority in disposition or talent, to the children not so trained.

A good start in life is no doubt a most important step towards future excellence, but it has yet to be proved that the Montessori start is better than other starts that could be named as regards its ultimate sustaining power. I could quote from our great writers on education, English, French and German, passages enunciating every principle that Dr. Montessori has laid down. I could adduce experiments which have been tried on all the lines she has adopted.

Admitting the interest and value of her synthesis, I think it is foolish exaggeration to hail it as a new revelation which is to supersede all existing educational faiths and provide us with a new heaven

and a new earth. It is worse than foolish exaggeration to declare that under other systems the spontaneity of our children is repressed till they become "almost like dead things." There is not, as is asserted, any crude dogmatism amongst us on educational subjects. We are, it seems to me, peculiarly open to new ideas, but we must have time to consider before we accept a wholesale revolution.

In St. Saviour's Child-garden, in the Cannongate of Edinburgh, Miss Lileen Hardy has anticipated most of what is really good and notable in the Montessori system and has avoided what I regard as its mistakes. With a personality not unlike that of Dr. Montessori, with a heart as loving and womanly as hers, but with material to deal with in Scottish children of the poorest class much harder and less receptive than that which Dr. Montessori has had to manipulate in her Italian schools, Miss Hardy has achieved results not inferior to those of which any Casa dei Bambini can boast.

Miss Hardy recognised the deplorable waste of vitality that is going on in the slums, the unsuitability for child development of the home conditions in the crowded areas of our big cities, and the evils arising from the ignorance, preoccupation, physical incapacity, and even the undisciplined love of the mothers, and so she effected a little clearance in the densest and dirtiest corner of Edinburgh, and converted it into a garden plot in which she has reared out of unpromising buds a crop of happy and healthy children.

Keenly alive to the good instincts of the children, and to the lovable traits in their nature, she has not shut her eyes to the destruction of the highest and holiest that is caused by self-indulgence and lack of discipline, and so has applied herself to the guidance of growth. In close co-operation with the home, in intimate communion with the child, in pursuit of noble ideals she has overcome obstacles which might have seemed insurmountable, and has set an example which is being and which must be followed.

The School Inspector has blessed her undertaking, and the report on the children whom she has sent on to the elementary school is that "from the first they have shown a keen interest, have been most diligent, and have readily adapted themselves to the work as conducted in a large class...All except one (who was handicapped by illness) have proved themselves quite proficient, more so than others, in the different branches of the class work. They are most amenable, very mannerly, kindly natured and truthful always."

Miss Hardy's *Diary of a Free Kindergarten* is a beautiful, delightful and unpretentious bit of child-study which I would earnestly recommend to you.

The bedrock principle in the Montessori system, we are told, is that no human being can be educated by anyone else. He must do it for himself if it is to be done at all, and this principle of self-education and voluntary effort was laid down clearly by Pestalozzi and Froebel long ago. The Montessori fundamental principles are, we are assured, liberty and sense training. Pedagogy, it is affirmed, is still synonymous with slavery. It is emancipation that Dr. Montessori has secured. Free growth is the ideal, and that free growth hitherto, according to Dr. Montessori and her adherents, has been arrested and marred by education.

Now thirty years ago, I defined education as "the guidance of growth," and to that definition I adhere to-day, but to Dr. Montessori education, theoretically, at any rate, is the growth without the guidance. I say theoretically, for the moment she sets practically to work, guidance of some kind is abundantly in evidence. The child must indisputably do the growing for itself, but its growth may be fostered and encouraged or stunted and distorted by external influences. There must be nourishment, support, pruning and adjustment to surrounding conditions for the growth is not in the open and unconfined, but in the midst of other growths that limit and muffle it. It is really obedience and not freedom that is the essence of education. Obedience to those physi-

cal and natural laws, by which the world is governed, obedience to those moral and social laws that have been evolved by the experience and wisdom of mankind.

Even the animal instincts amongst animals do not always educate themselves. The animals in which instinct rules come into their full powers at once, and have little or nothing to learn from training or experience. But the higher types of animals in which experimental action directed by experience stored in the brain is the dominating feature, have to be educated by experiment and teaching to adapt themselves to the varying circumstances in which they exist. And their education is not always of a personal or spontaneous character.

Cygnets have to be coaxed or pushed into the water by their parents, and seem anxious to get out of it, by climbing either on the bank or the back of the adults. Young gulls avoid the water for a considerable time, and are eventually pushed into it by their parents. Sparrows may be seen tempting their young into the air by offering them food and flying off a little distance before it has been taken. The mother stork at the proper time pushes the young birds off the edge of the nest or chimney stack on which they have been resting. Most of the birds of prey and many of the perching and singing birds push their young off a support and then hurriedly fly under them to break their fall.

Young mammals which naturally would have their food brought to them by their parents seem to have a very small amount of instinctive selection or rejection, and to be in need of guidance, for when brought up by hand they will partake of very unsuitable food. Young birds and mammals do not spring fully equipped into life, but have to be educated and learn by trying. They have instincts, but these carry them a very little way. "It is," says Dr. Chalmers Mitchell, "with the task of fitting themselves to their world that they occupy their youth, and it is for this task that they enjoy a prolonged period of youth and a degree of freedom from the immediate cares of finding their own livelihood, and protecting themselves from the dangers of the world."

As we ascend in the scale of life the duration of youth extends, and with this goes a gradually increasing need of parental care and intelligent guidance. In the human animal growth is not sufficient even in the case of the instincts. They must be disciplined and controlled, and as regards every other aptitude guidance and compulsion are called for. Freedom only comes when growth is completed. Of what use would freedom be to the newborn baby that is growing rapidly? Why, if left free it would perish miserably. In everything save in the taking of food it is subjected to coercion. And from that point onwards, until mature life is reached, some, but a gradually diminishing degree of guidance is necessary. It is through obedience to wise guidance that true freedom is attained.

Grateful as we must be to Dr. Montessori for her endeavours to eliminate harsh and cruel practices, and austere and cramping customs from education, and to infuse happiness into the lives of little children and promote their healthy growth, we cannot subscribe to her doctrine of non-interference. There is much growth in children that is not healthy. The pathological study of childhood to which I have directed your attention brings to light an enormous proportion of defects, blemishes and disorders in children which must be promptly interfered with and cannot be left in freedom to work their wicked way.

The psychological study of childhood discloses innumerable intellectual defects and moral foibles with no power of self-rectification that must be interfered with if failure and disaster are to be avoided. Even the perfectly normal child cannot be safely left to spontaneous growth, but the perfectly normal child is a scarce commodity in these days, and the trend of education in modern times has been to leave less and less to spontaneous growth, and to attack more and more actively those

degenerative changes that render well-balanced growth impossible. In the thickets of our modern civilisation mere wild growth untended is not likely to yield favourable specimens.

Dr. Montessori moving about in the smiling and refreshing oasis she has created around her, takes too propitious and sanguine a view of human nature. She proceeds on the assumption that all babies are born good; she ignores the doctrine of original sin; faults and vices are, according to her, educational implantations, just as diseases are due to bacterial invasions, and bacterial diseases and faults and vices are all best resisted by healthy growth. "Out of every one thousand cases of naughtiness among little children," says one of Dr. Montessori's apostles, "nine hundred and ninety-nine are due to something else than a bad impulse in the child's heart."

The theory is a pleasing one, leans to virtue's side, and is consoling, if somewhat embarrassing, to those engaged in the teaching and training of young children. In all babies there is some, in most much, good that can be evoked, and that is worth looking for, and in many babies evil propensities are engendered by vicious educational methods. But, alas! in the human garden there are weeds, briars and thistles, as well as lilies and roses, and morbid hereditary tendencies as well as pathogenic bacteria are at work. Criminal statistics negative the all-born-good baby hypothesis, and too many parents and teachers are alive to faults and vices that date from the cradle, and for which no educational indiscretions are responsible.

Dr. Montessori fully admits the pernicious effects of states of ill-health and even temporary ailments on the child's moral nature. Can she shut her eyes to the mental and moral deterioration that must result from the inherited diseases and physical defects which are now so enormously prevalent amongst children? Her system is largely founded on the avoidance of influences that may prejudice the growth of the child. Is it not correlatively inevitable that there are influences which are conducive to that growth besides mere letting it alone? It is not mere freedom of growth of any kind, but the guidance of growth that is wanted so that what is good in it may be encouraged, and what is bad checked, or if possible eradicated. That is in all education the object to be held in view.

In her physiological studies Dr. Montessori has not perhaps given sufficient attention to "inhibition," a nervous influence that restrains, controls, and counteracts excessive stimulation, and the importance of which in all the movements of the body has been strikingly illustrated by Professor Sherrington, of this University, in his investigation of the phenomena of reciprocal innervation. Inhibitory influences not less than free growth are needful in education.

I confess I have been puzzled to understand how Dr. Montessori has arrived at her theory of self-education and spontaneous growth. She tells us that her great teacher has been Seguin, and that she has drawn her inspiration from his system in the training of idiots. But in Seguin's system there is no trace of self-education and no dependence upon spontaneous growth. From first to last it is interference, constant, minute interference and guidance. The idiot, if left to himself, grows up an idiot, and becomes more and more idiotic and degraded as his growth increases. It is only by the diligent interference of his teachers in steadying and co-ordinating his feeble muscles and in fixing his wandering eye that he is rescued from progressive debasement and that any improvement in his condition can be obtained. The whole system hinges on enforced exercises.

Speaking of the idiot, Seguin said: "Seated like an inert mass upon his chair we must make him move. To that effect we employ instruments of passive exercise. The legs do not bend, we make them yield under the elasticity of a baby jumper, the feet do not come forward for the walk, let them encounter with the regularity of a walk a spring board. Kneading the muscles, handling the articulations, mov-

ing with the floor of a treadmill and other appliances will ultimately give the pupil strength to walk...When the idiot cannot, or will not, use his hands, he is put in front of an inclined ladder, his feet on one round, his hands on another, which generally he will grasp. Supposing the worst to be the case, the child's equilibrium is soon lost; he falls as low as the teacher thinks proper, as he has a good hold of him by the ring of his gymnastic belt. Then he replaces the child on the ladder and allows him again to fall, and so on until the child understanding better, and feeling where more comfort may be found, holds on with his hands. If he protracts his resistance too long, a stop may be put to it by transfering the child to the perpendicular ladder, he being on one side, the teacher on the other, and a sufficient pressure exerted by the teacher's hands upon those of the child to prevent him throwing himself down, and to make him support his own weight."

"To penetrate the glassy or tarnished eye of our pupil," Seguin goes on, "we keep the child seated or standing in front or close to us, alone, no noise, no company, not much of light, nor of darkness, our feet ready to immobilise his feet, our knees his knees, our hands his hands. We search his eyes with our intense and persevering look; he tries to escape it, throws his body and limbs in every direction, screams and shuts his eyes. How long will it take to succeed? Days, weeks, or months, it depends upon the gravity of the case, upon the help received from the general training, and from other means of fixing the attention of the eye."

Now what, I would ask, in all this is there of self-education and spontaneous growth? What is there to remind us of the pleasing picture painted for us by Mrs. Fisher and Mr. Edmund Holmes, of that Italian Utopia or Liberty Hall, the Casa dei Bambini in the Franciscan Nunnery of the Via Giusti, with its free and blissful babies all sprawling on the floor, and doing exactly what they like? It is all interference and compulsion of the most stringent type.

After Seguin, Dr. Montessori tells us that she is indebted to Itard, a medical teacher of deaf mutes, for her educational enlightenment and new departure, and again I am puzzled to understand how she can have derived from him any sanction for her belief in liberty as the essential element in the rearing of the young. Itard has really supplied us with a conspicuous example of the destructive effects of unrestrained liberty on the young. He is the historian of the Savage of the Aveyron, a child who had grown up in a natural state and in freedom even ampler than that of a Casa dei Bambini. Criminally abandoned in a forest, where his assassins thought they had killed him, this child was cured by natural means and survived for many years, free and naked in the wilderness, until captured by hunters, he entered on the civilised life of Paris, showing by the scars with which his miserable body was furrowed the stories of his struggles with wild beasts and of lacerations caused by falling from heights.

Well, what was the state of this child of nature: a child, according to Rousseau's own heart, who had been exempt from that education which is deleterious and spoils the man? Did he exhibit that higher mentality which, according to Dr. Montessori, is encouraged by freedom? Not at all. He was an idiot and mute, and it was only by depriving him of liberty and imposing on him the restraints and renunciations in which compulsory education consists, that Itard succeeded in winning him back in some measure from his savage state.

I do not attach too much credence to the ten cases of savage youths and girls found herding with animals or wandering wild, recounted by Linnaeus. The details respecting them are scanty, but it is clear that in all of them freedom had resulted in profound mental deterioration. We have daily experience in this country that freedom in children, freedom from instruction, freedom from discipline is anything but salutary in its mental effects.

But the freedom of the Montessori Child-homes is by no means equivalent to

natural freedom. It is, after all, more nominal than real. The sway is there, but it is gentle and disguised, and sometimes indeed sinks into namby-pambyism, as when we are told that we must not say to a child who has spilt a plateful of cookies on the floor, " For mercy's sake, do look what you are doing ! " because it was our business, as its leaders and guides in the world to do that for him. There is a wide gulf between true kindness and silly sentimentality. Laudable efforts are made in the Casa dei Bambini to enlist and concentrate attention, by interesting occupation, and so to strengthen self-control over aberrant thoughts and movements, and there are lessons of silence to conduce to self-mastery, although this seems somewhat inconsistent with the warning as to the danger of suffocating a spontaneous action at the time when the child is just beginning to be active.

The description of Montessori discipline as given by its author is utterly vague and unsatisfactory. " Imitation in the principle of collective order," and " the concept of independence," which are fully discussed are all very well in their way, but the difficulty is to see how these are to regulate the conduct of the young child. Behind them there must be compulsion, although we are afforded little or no information as to how that is applied. Prizes and external punishments have been abolished, because " man disciplined through liberty begins to desire the true and only prize which will never belittle or disappoint him : the birth of human power and liberty within that inner life from which his activities must spring."

All very fine, but how are babes and sucklings to grasp it? Even in the Montessori paradise police measures must sometimes be necessary. Montessori children, it is admitted, sometimes " quarrel and fight," moments of disorder occur. The children are not allowed to do any harm. The pupils must subordinate individual caprice to the demands of the common good, they are not allowed to quarrel or interfere with each other, and they have duties to perform at stated times.

But how is all this brought about? Complacency, folded hands and benign smiles won't do it. Dr. Montessori almost inadvertently, one would think, herself describes the consequences when the teachers began to allow the children to do as they please. " I saw children," she says, " with their feet on the table, or with their fingers in their noses, and no intervention was made to correct them. I saw others push their companions, and I saw dawn in the faces of these an expression of violence without the slightest attention on the part of the teacher. Then I had to intervene to show with what absolute rigour it is necessary to hinder, and little by little, suppress all those things which we must not do, so that the child may come to discern clearly between good and evil."

But since the days of Eden the knowledge of good and evil has not necessarily determined the choice between them, and it is hard to see how absolute rigour is compatible with the radical principle of complete liberty. On reading this one has to ask : What has become of absolute freedom, and as regards discipline how does the Montessori system differ from any other?

The only specific instance of discipline mentioned by Dr. Montessori raises curious ethical questions. Children who disturbed the others, she said, were at once examined by the physician, a practice which would entail a somewhat overwhelming burden on our School Medical Officers in this country. "When the case proved to be that of a normal child, we placed one of the little tables in a corner of the room, and in this way isolated the child, having him sit in a comfortable little armchair so placed that he might see his companions at work, and giving him those games and toys to which he was most attracted. This isolation almost always succeeded in calming the child. From his position he could see the entire assembly of his companions at work. Little by little he would come to see the advantage of being one

of the company working so busily before his eyes, and he would really wish to be back and do as the others did. We have in this way led back again to discipline all the children, who at first seemed to rebel against it. The isolated child was always made the object of special care, almost as if he were ill. I myself when I first entered the room went first of all directly to him, caressing him as if he were a very little child."

The corner is an ancient and approved item in the penal code of the nursery, but when the naughty cornered child is petted and cajoled, confused moral notions must be engendered in his own mind and in those of his companions. Rules there unquestionably are in the Montessori School, but these we are led to believe are evolved out of the children's intercourse with each other, and because they discover that they cannot live together without rules which all can respect and obey. This seems to be a somewhat circuitous way of arriving at wholesome and necessary rules of social existence, but however arrived at the rules even if not formulated are there, and their observance must somehow be secured.

The guidance question was nicely summed up by a little Italian girl who had been to a Casa dei Bambini and had been taken away because she didn't like it, when she said to her mother, " Isn't it queer how they treat you at a Casa dei Bambini! They asked me, ' Now which would you like to do, Ida, this or that? ' It makes me feel queer. I want somebody to tell me what to do." That truly reveals a deep-rooted craving in the child as expressive of a constitutional want as any appetite. Tots from three to six are too soft and pulpy for absolute independence, too trustful for democratic principles. Self-reliance and initiative are excellent, but the best of us at times, like Ida, feel the want of somebody to tell us what to do. Aggressive self-assertion is always offensive.

It was not from Seguin or Itard, her revered teachers, that Dr. Montessori learnt the lesson of lawlessness, or the supreme obligation of permitting growth uncurbed and unguided. They had no such notions, and have become identified with them in Dr. Montessori's teaching, simply because she has derived from them those methods of sensory and motor training which form the most outstanding and admirable part of her system. She was for years the Director of the Asylum for the feeble-minded in Rome, and while faithfully performing her duties there became acquainted with the writings of Seguin, whose physiological methods of the education of idiots she put in practice with good effect in the relief of mental disabilities.

It soon occurred to her that this method was applicable to the education not only of idiots, but of normal children, and selecting young children, three to six years of age, who are mental deficients in relation to children of older growth, she found in them an encouraging response to the use of those physiological means and apparatus which Seguin had found efficacious in the development of the dynamic, perceptive, reflective and spontaneous functions of the weak-minded.

Dr. Montessori has followed closely in Seguin's footsteps, and at first at any rate employed most of the instruments of teaching, which he enumerated : pictures, photographs, cards, patterns, figures, wax, clay, scissors, compasses, pencils, collections, books, spades, wheel-barrows, the watering pot, the wooden horse, the hammer, the ball. Fifty years have elapsed since Seguin wrote, science has advanced, and Dr. Montessori, who has had the advantage of a thorough scientific training, has been able vastly to improve the apparatus used and the mode of its employment.

Much of the material used in the education of the mentally deficient has been abandoned in the case of the normal child. Elaborate pedagogical experiments have been carried out. The esthesiometer and pyschometric instruments have been resorted to. There may be differences of opinion as to the proper order and relative significance of certain sensory exercises, some of them may be thought a

little superfluous in the case of an ordinary wide-awake child, but there can be nothing but approval of her general scheme.

One follows, with interest and with appreciation of Dr. Montessori's ingenuity and resource, in her training of common sensibility of the tactile, thermic, baric, stereognostic senses, her education of the sense of vision as regards differential visual perceptions and chromatic impressions, of hearing as regards the discrimination of sounds and the sense of rhythm and of taste and of smell.

It is claimed for the Montessori methods of training the senses and intellect that, by them, children secure a rapid and easy mastery of the elements of reading, writing and arithmetic. That I can well believe, but I question whether their employment in this country would have equal success. The Italian children to whom these Montessori methods have been applied are precocious when compared with our English children. I should say that from three to six years of age they are nearly twelve months ahead in mental development. I am inclined to think that at seven years of age our English children in our elementary schools are abreast of the Montessori pupils of six in these accomplishments, notwithstanding the fact that the Montessori children are taught in smaller classes, limited to twenty-five, I believe, and have the advantage of more individual attention.

Viewed apart from the dominating figure of its founder and benefactor, the Montessori school is a glorified kindergarten, or, having regard to the long hours and living provided, a cross between a first-class kindergarten and a well-conducted crêche. Strenuous efforts are made to distinguish between the kindergarten and the Montessori school, but the differences are trivial and illusory, while the resemblances are substantial.

In the kindergarten, we are told, the emphasis is laid on the fact that the teacher teaches ; in the Montessori school, on the fact that the child learns; but in both of them there is teaching and learning, and mere emphasis which must vary from time to time cannot be accepted as a specific mark. In the kindergarten, we are told, the teacher is nervous, smiling, fidgety and over-active, in the Montessori school tranquil and unruffled, but surely individual teachers in the two vary from time to time in their personal traits, and a mere nervous or phlegmatic habit in the teachers can scarcely be recognised as an essential feature in the institution. In the kindergarten we are told there is coercion, sweet and coaxing, but still coercion, in inducing a disinclined child to join in the games or songs; while in the Montessori school the disinclined child is left to his own devices, no strongly discriminating contrast after all, nor one to my thinking to the credit of the Montessori school.

The kindergarten and the Montessori school are both sustained by sentiment, generous and gentle sentiment, which was of much the same kind in Froebel as it is in Dr. Montessori. They deal with children of the same age, and have the same aim : the children's happiness and progress. They differ somewhat in detail, in apparatus and technique, but the principle underlying them is the same. The Montessori school has introduced some improved methods, but it is by no means unique or deserving of the fuss made about it.

It has been impossible for me here adequately to praise Dr. Montessori's work, where it is admirable, or fairly to criticise it where it is open to comment, but I have felt called upon to refer to it, if only cursorily, because it is essentially a child-study subject, and must exercise the minds of all who are interested in our Society. It is founded on a minute observation of childhood, and on an analysis of the child-mind. It sometimes, I believe, misinterprets and misapplies the observations made, and goes astray in the labyrinths of mental embryology, but it is wholly right in stimulating scientific curiosity in the teacher, and in insisting on the importance of watching natural phenomena in the child, and the effects on it of every exercise in which it is engaged.

The personal charm which has, I

believe, so largely contributed to the success of Dr. Montessori's work in her children's homes has apparently captivated all those who have casually visited them. They have become convinced believers in her system, and have gone forth on a zealous propaganda of her tenets; so fervid has the Montessori cult become in some quarters that it is almost dangerous to hint a doubt of it, and of the miracles it is alleged to have wrought. I have run the risk, and while strongly recommending Dr. Montessori's writings, sympathetically introduced to us by Mr. Holmes, and delightful in their highly poetic, figurative and suggestive style, to all interested in child-study, I would ask that they should be well weighed in the light of the wisdom of the ancients and of modern experience in this country, before they are made the basis of costly experiments.

The Child of the One-Roomed House. III.

By W. Leslie Mackenzie, M.A., M.D., LL.D., F.R.C.P.E.,
Medical member of the Local Government Board for Scotland.

The need of solitude. The test of a home is do the children love to stay there? Home-sickness is a disease; but it is a disease rooted in a sound feeling. If the truant runs away from home, it is because the home fails to provide him with his true point of repair for the development of his own life. The one-room house never can do so. When a boy acquires a soul, he must go to be alone with it. He needs a room of his own. He flies from the obsessions of his family life. He must go away from home in the spirit, if not in the body. Every boy and girl must go through this phase. It is a condition of possible ethical manhood and womanhood. They must "possess their soul."

In the one-room house what is so plain as often to require the interference of the police is equally to be found in the many-roomed house, but not in the same form. The desire of the boy for an island far away is not morbid, it is normal. It is the signal that his hour is at hand. He must go to be confirmed. He has become conscious of the call of race. He must be allowed to have his solitude in the woods or in the streets, or among strangers not knowing him and not known to him, or among his books or his tools. There are many ways of going into the desert. But solitude he must have or he fails to achieve the freedom of a separate and efficient personality.

Which of us has not in some degree yielded to the fascination there is in the contemplation of gloom and sorrow and loneliness and death? The feeling has its great expression in the *Sorrows of Werther,* the ironical tragedy of adolescense and the equal tragedy of *Alastor;* but there is not a boy, there is not a girl, that does not at some transit in life awake to the imperative impulse to go away, the inextinguishable longing to be alone.

> "There was a poet whose untimely tomb
> No human hand with pious reverence reared.
> But the charmed eddies of autumnal winds
> Built o'er his mouldering bones a pyramid
> Of mouldering leaves in the waste wilderness.
> A lovely youth, no mourning maiden decked
> With weeping flowers or votive cypress wreath
> The lone couch of his everlasting sleep;
> Gentle and brave and generous, no lorn bard
> Breathed o'er his dark fate one melodious sigh;
> He lived, he died, he sang in solitude.
> Strangers have wept to hear his passionate notes;
> And virgins, as unknown he passed, have pined
> And wasted for fond love of his wild eyes.
> The fire of those soft orbs has ceased to burn,
> And Silence, too enamoured of that voice,
> Locks its mute music in her rugged cell."
>
> Shelley: *Alastor.*

Go among the rescue people and you will hear tales to rend the heart. Young girls rush from home with no apparent reason, with no certain outlook, driven none knows how towards an issue unknown to themselves, and unguessed by others. You will find a study of the impulse in *The Story of an African Farm.* The psychologist of the police court suggests the "penny dreadful" as the inciting cause, so mistaking the symptom for

the disease. The girls are sentenced and sometimes put in prison, or sometimes they are handed to some sympathetic human friend, who, if she does not always fathom the genesis of the go-impulse, at least knows how to nurse the scared mind and smooth its terrors down.

To return those too-urgently growing souls to the home, is to apply to them a discipline of frightful severity; but two results often follow: the parents for the first time, through grief, learn to feel their own selfishness and incompetence; the child, through the premature and sudden detachment from the home, establishes a new and higher relationship to the parent. To every parent as to every child this higher experience in some measure comes, except where the "home" in one room has made normal growth either of parent or child impossible. The parent turns brute and the child runs away.

In the stone-age the idea of "truancy" was probably very simple. When a boy or a girl felt the go-impulse in his blood, he went. If he escaped alive, he might return a man. If he died in the effort to escape, he could be no further punished. But in the modern world, if the boy escapes he is sent to a reformatory. If he returns he is punished by the parent. In either case, he is punished. The parent remains unlearned in the psychology of the child and goes on as if he were not the chief criminal himself.

At a certain stage, the normal thing for a one-room child to do is to run away. The poorer the nest, the earlier the flight. If he can put up with the stench, and the degradation of the crowded one-room house, it is because he vaguely feels that some house-room is in the end better than none. It is not because the home is a fit place for him to live in.

But the magnetism of mother-love, of the child for the mother and the mother for the child, can always be counted on, and the normal runaway, when the go-impulse has spent itself, always "wishes he was home." One poor holiday-home child said to a newcomer: "It's a fine place this. There's a denner here *every* day. It would be a fine place if a body jist hed his mither." He had been *sent* there; but he would have felt the same if he had gone of his own impulse into the larger world, as so many go.

Our reformatories and industrial schools must include a big proportion of runaways and stowaways. "But I was aye a truant bird and thought my home a cage," sang the "Dying Soldier." He would to-day be in danger of being called "feeble-minded" and "segregated" accordingly. Segregation is convenient; but is it the remedy? Is there not something to be said in favour of the runaway from the crowded one-room house? I am not thinking of the fatherless and motherless, but only of the "crowded-out" child.

In the one-room family, the children ripen early in mind, or at least they take on the form of the adult habits with exceptional rapidity, because they see little else with equal intimacy. No doubt, the child, knowing no other nurture, lives there ungrudgingly until he tastes the freedom of company in the streets, or fathoms the delight of the economic independence that comes with his first money. Then the failure of the one-room home is manifest.

Recently a whole Act of Parliament was devoted to the stopping of street employment, and since that discussion died down, Parliament has brought nearly all the acts for the protection of children into one of greater extent and effectiveness. The problems that call for this terrible legislation have their immediate root in the one-room house and all it stands for, or perhaps we may more accurately say the one-room house is the crossing where all these broken currents of social life may most easily be studied.

In the Children Act, there are some signs of an effort to adapt the blunt processes of the law to the psychology of the child. Some superstitions about the effect of gross punishment go by the board. For example, no child under fourteen can now be sent to prison. But children may still be sentenced to whipping, and the right of the parent, the teacher, and any

authorised guardian to inflict punishment (by whipping or otherwise) is carefully reserved. Until a few years ago flogging was a legal form of punishment in the Navy and Army. Until last year, it was legal only for children and young persons. To order an incisive pain for a very young sinner is no doubt to nourish the sense of majesty in the magistrate; to inflict the pain is, no doubt, to create a greater sense of justice to others in the inflictor, and to hurt the child without permanent visible damage has from time immemorial been the mainstay of "parental responsibility."

So one begins to wonder why it should now be necessary to preserve those ancient common law rights by a specific clause in a statute. There may, there surely must, be some danger that whipping shall deteriorate in quantity, or in quality, or in both. For my part, much as I should wish to see the weak points of the family strengthened, I have some doubt whether the unspared rod, or the gratifying birch, or the sounding strap is an adequate remedy for the moral and physical disorders that flow in a foul stream from the one-room house. Hitherto pain in this form has been a failure. It would be interesting to study why, all the same, it is universally regarded as a success.

If there is anything in the speculations and arguments of Freud in reference to the first two or three years of life, it is this: that the animal conditions governing those years do determine largely the future of the moral life of the child. Mothers do not always know this, and fathers have not always the time, if they have the capacity, to think of it and, in the rush of the one-room house, only the rough work of keeping the child going counts for anything in the day's duties. The child grows up anyhow with any kind of relationship to its fellows.

Perhaps the very neglect is sometimes an advantage; for the effects of over-nursing and over-nurture may be themselves more harmful in establishing the animal tendencies on too warm a foundation of sensation and thus leading in after life to biases that are destructive to the character.

But it seems reasonable to say that the bringing up of a child in pure promiscuity among adults is much more likely to prepare the soil for perversions of every kind than the bringing of him up in controllable conditions of decency and direction. The nervous systems of the ill-nourished tend to be unstable from the start, and what is prepared in ill-feeding, over-stimulation and under-sleeping is reaped in after-irritability and moral anarchism. "Let me have men about me that are fat," said Julius Cæsar, "sleek-headed men and such as sleep o' night;" but anyhow, give us fat children.

There are many other points that we might discuss in the psychology of the one-room house; but time and space forbid. But I should like to offer, only for discussion and as first formulations, a few of the many propositions that suggest themselves about the problem of over-crowding. Perhaps none of the propositions is even a half-truth, and every one of them, standing unargued, is open to misunderstanding. But to disarm criticism and to secure discussion, I shall call them merely personal opinions. Before any critic passes final condemnation on any of them, let him study Dr. James Burn Russell's "Life in One Room." (*Public Health Administration in Glasgow:* memorial volume, p. 189. Maclehose, Glasgow).

SOME PERSONAL OPINIONS ABOUT OVER-CROWDED LIFE IN ONE-ROOM. (1) *The mean streets are the drawing-rooms of the poor.* In the earliest years of life are laid the foundations of the "Buried Temple." That will be the true shrine of worship long after the visible shrines have risen over it. If a crowded one-room house be the "buried temple," what will the worship be?

The proof that the one-room family is not a satisfactory unit of civilisation is that we are all trying to justify it, or to explain it away. Justification is called, "emphasising the moral factor." Is over-crowding essential to the genesis of the "moral factor"? On the average, is the one-room child or the many-room child the better citizen?

(2) *The desire for a separate room is a sign of incipient self-sufficiency.* One room, one person when the person needs a room is the minimum for a civilised home. A man cannot become an efficient personality if he is always in company. Solitude at will is a condition of efficient personality. Perpetual company is perpetual prison. A boy cannot grow good if eyes are always upon him. The spy-system of family life breeds criminals. The one-room house forbids privacy. You can neither live nor die decently in a one-room house. (See Russell's lecture, *op. cit.*, p. 198).

(3) *The one-room is usually high in rent and low in morals.* The one-room house is never cheap, except in money; in everything else, its expense may be incalculable.

Usually, the one-room house means density of two populations; one human, the other parasitic. In a crowded room, it is difficult to keep the species distinct. If the species be fleas, bugs, lice, microbes and humans, the microbes are always a majority, the humans usually a minority. When a child spends his nights among populations of parasites, he is known by the company he keeps.

(4) *Life in a boxed-in crowd is experimental Darwinism. Character in a boxed-in crowd is a product of unnatural selection.* The over-crowded child, like the over-crowded sapling, cannot grow to its full potentiality. One ethical reward of over-crowding is a relatively greater intensity of the family sentiments, including hatred as well as love. This is why, at the Monday Police Courts, the number of black eyes varies directly as the density of population and inversely as the number of rooms in the house.

The broad generalities I have tried to formulate are not meant as anything more than provisional inferences from gross facts. Some of the inferences, however, it would be possible to base on statistical averages; for instance, the statements as to food, sleep, clothing and general nurture. Thus, in Glasgow, some years ago the School Board had weights and heights taken of some 73,000 children, roughly classified into poorest district schools, poor, better class, and higher class.

In the poor districts, one and two-room houses predominate greatly. It was found that the average weights of boys aged five in the one-room, two-room, three-room and four and over room houses taken in this order were:—37.2 lbs.; 38.6 lbs.; 39.5 lbs.; 40.1 lbs.; the average heights, in inches:—39.0; 39.9; 40.7, 41.4. For girls of the same age, the average weights in lbs. were:—36.6; 37.8; 38.0; 39.2; heights:—38.9; 39.8; 40.2; 41.0. At age 10, the figures for boys were, weights:—55.5; 57.7; 59.7; 61; heights:—48.3; 49.3; 50.1; 50.8. For girls (age 10), weights:—53.5; 55.4; 57.6; 58.7; heights:—47.8; 48.7; 49.6; 50.3. At every other age, the same general concomitance was shown: the one and two-room houses had the lightest and smallest children.

It would also be easy to produce voluminous figures about the higher rates of infantile mortality, infectious disease, and general diseases; but statistical arguments are hardly necessary for matters so outstandingly obvious and, in any case, there is not now time to offer such arguments.

If time allowed, it would be interesting to follow up other clues and in the end we should perceive how, in the organic interrelation of one human being and another, the one and two-room houses act as an instrument of analysis, showing where the stresses of nurture press hardest and showing us certain definite results.

It would be interesting to verify the conclusion of Niceforo: that in height, weight, number of deformities, disease, mentality, endurance, practically in every respect, physical and mental, the poorer classes (as defined by a given wage in the Swiss town where the investigation was made) are inferior to the classes that enjoy greater comfort.

This, you will see, lands us in much larger questions. To these there is no end, and I can only stop now with the expression of a hope that the students of child-life in the cities will not forget the "child of the one-roomed house."

Suggestions for Study and Practice.

Physiological Age and School Entrance. "The main conclusions to which the facts presented in this thesis point are:—(1) That there is a mass of evidence indicating a transition in the physical development of the child at the period [6 to 7 years]. (2) That there is evidence to show that girls are on the average more advanced in their physical development at this period. (3) The requirements for entrance to school based on stage of progress in physiological development, or physiological age, would be far superior to a requirement taking account of chronological age only. (4) That in the application of physical measurements for the purpose of finding degree of progress in physical development, a method indicating the percentage of adult size attained at a given age is superior to a method comparing absolute data directly. (5) That the hygiene and pedagogy of this period are of prime importance for the future development and welfare of the individual." —*Arthur K. Beik*, Clark University, in *The Pedagogical Seminary*, September, 1913.

Food and the Child. "After a year's experiment it has become evident that the brain power and the general morale of the children have vastly improved" (p. 406). "The improvement was very obvious in some children, who visibly filled out and brightened up" (p. 372). "The effect of the feeding on the children is a marked improvement judged from the general appearance of the boys, who are almost all brighter. The improvement is particularly noticeable in their play...There is less fatigue in lessons, and the lads are capable of more continuous exertion" (p. 32).—*Rearing an Imperial Race*, edited by Charles E. Hecht, M.A.

The Child-Study Society and the Constituent Societies.

Our Next Annual Conference is to be held in Edinburgh on June 6th to 8th, 1914. Sir James Crichton-Browne will give a presidential address, and the following addresses will be given in relation to *Experimental Work in Education* (the subject for the Conference): *A Survey of the recent investigations and criticisms on the Binet Simon Tests,* by Miss Katharine L. Johnston, M.A. (Principal of the Maria Grey Training College); *Experiment in relation to School Subjects and Methods,* by Mr. Drever, M.A., B.Sc. (Edinburgh University); *Mental Tests,* by Mr. Cyril Burt, M.A. (Psychologist to the L.C.C.); and *A Plea for the Recognition of Instincts in Education,* by Dr. Macpherson. Hospitality for 100 is offered.

The Birmingham Society.—The following lectures will be given at the University at 6 p.m. :—December 9th, the Hon. Mrs. Franklin, *The Principles and Methods of the Parents' Union School*; January 20th, Dr. Walter Jordan, Presidential Address; February 17th, J. Makepeace Forster, B.A., B.Litt., *Moral Instruction Before the Age of Adolescence*; March 17th, Frank Roscoe, M.A., *The Teaching of Arithmetic.*—*Miss A. J. Dawes.*

The Cheltenham Society.—The twentieth session of the Cheltenham Society opened with a Lecture by Lady Gomme, on the subject of "Children's Traditional Singing Games," given by kind permission of Miss Faithfull in the Princess Hall of the Ladies' College on October 30th at 8 p.m. This interesting subject was illustrated at its close by the performance by some of the students of two or three of the old games, such as "London Bridge," "Oranges and Lemons" (illustrative of the primitive contests for territory), and "Here we come gathering Nuts in May" (or, as Lady Gomme considered to be the original words, "Knots of May," i.e., bouquets of hawthorn), which game she believed had reference to the primitive customs of marriage by capture. She proved in her lecture that expressions in the various songs she mentioned showed the games to be something more than the random inventions of children. She believed them to be the last relics of old tribal usages.

On November 4th the President, Mr. King, will give his presidential address on *A Defence of Present Elementary Education.* In February Miss F. Baird will give her experiences of the Montessori System, and in March Dr. Walter Jordan has promised to address the society.—*Mrs. L. M. McCraith-Blakeney.*

The Edinburgh Society.—There were four meetings last session, of which two were Lectures and two Discussions :—Inaugural Lecture by Dr. Clarkson, Head of the Larbert Institute for Defective Children, on *Mentally Defective Children*; Lecture on *The Psychology of Writing,* by Mr. Drever (Ed. Univ.); Discussions: *The Due Proportion of the School in the Life of the Child,* led

by Mrs. Jack, and *The Montessori Method,* led by Miss Borland.

Dr. Clarkson's Lecture was especially interesting in view of the new Mental Deficiency Bill. Mr. Drever showed some interesting results of laboratory experiment, and demonstrated that finger movement was of prior importance in writing.—*Miss Maud Morin.*

The Exeter Society.—The first meeting of the Winter Session was held on October 20th in the University College. Miss A. J. Walker, M.A., gave an account of *A Montessori Class* which is being conducted in an English elementary school. After having described the room and its arrangement, and the English adaptation of the Montessori apparatus, she spoke of a morning's work in the class, and said that the chief and very attractive points to be noticed were the children's happiness and self-control, their obedience and complete busy-ness.

The second meeting was on November 11th, and Mr. P. A. Dodds, the Headmaster of the Royal Institution for the Deaf, Exeter, read a paper on *After Care Work.* He pointed out the difficulties of the work and its essentially voluntary character, and expressed the firm conviction that this work needs to be helped financially by the State, and aided by further legislation. He showed how useful and necessary the work is, not as relieving parents of their responsibility, but as helping them; and he gave convincing illustrations from the after care work which has been going on for some years in connexion with the School for the Deaf.—*Miss A. J. Walker.*

The Halifax Society.—The society is trying to extend the scope and influence of its work by appointing delegates to the following societies having allied interests:— *The Children's Welfare League*: Mrs. A. T. Longbotham and Mr. Harwood; *The Yorkshire Association for the Permanent Cure of the Feeble-minded*: Mr. J. Arrowsmith; *The Workers' Educational Association*: Miss F. H. Ellis and Mr. Harwood.—*Mr. J. Arrowsmith.*

The Hartlepools and District Society.—On Tuesday, September 30th, Mrs. Read Mumford, M.A., gave her lecture on *The Religion of Childhood.* The chair was occupied by the Rev. W. J. Knowlden, M.A. The lecture was impressive and was listened to with great interest. Subsequently a meeting for the discussion of the subject of the lecture was held. Mrs. Mumford kindly sent some notes on the Teaching of Religion in Elementary Schools.

On Monday, November 6th, Professor J. A. Green, M.A., gave a lecture on *The Place of Handwork in Education.* Mr. H. J. Dean, H.M.I., occupied the chair. The lecturer very ably and forcefully put before his audience the claims of Educational Handwork. The dominant point of the lecture was insistence upon purposefulness in education.

Mr. H. Holman, M.A., is to give a lecture on Saturday, December 6th, on *Educational Handwork and the Class Teacher*; and Mr. E. G. A. Holmes, M.A., will lecture on *Some Aspects of the Montessori Method* on Wednesday, January 28th, 1914.

A Reading Circle has been formed. The book chosen for study is "Educational Essays" by John Dewey. It is hoped that the formation of other circles will follow.—*Mr. A. T. Prentice.*

The London Society.—The last lecture for 1913 will be given on Thursday, December 4th, at 90, Buckingham Palace Road, S.W. Subject: *Left-Handedness*; Lecturer: P. B. Ballard, M.A.; Chairman: W. F. Sheppard, Sc.D.—*Mr. W. J. Durrie Mulford.*

The Tunbridge Wells Society.—The annual meeting was held on October 20th at the Town Hall. The Committee's report gave a satisfactory account of the year's proceedings and the financial statement showed a good working balance. Several rules were revised and passed. Mr. Punton Smith was elected as president for the ensuing year and Miss Gertrude Edwards was elected to the joint offices of hon. secretary and hon. treasurer; some new members were also added to the Committee.

After the business meeting an interesting address was given by the Hon. Sir John A. Cockburn, K.C.M.G., M.D., on "Child Protection." He maintained that both the Froebel and the Montessori systems of education were excellent and were now coming into line. Education must be joyful. It was the greatest pleasure for a human being as well as for the animal creation to develop new powers. It was of course, necessary sometimes to inflict pain, but pain could never be education. One's heart must be in one's work. Discipline was essential, but that, too, was not education. If education caused a child pain that education was wrong. There must always be joy in work properly done.

True education recognised that mind and body always went together. The aim and object of national life was not "the greatest good of the greatest number," but "What will make for the greatest good of those who come after?"

The maternal instinct was the same in nations as in human beings. Hence the care of children was naturally the first charge upon the races. He emphasized the need for improving the health of children as they cannot be expected to work well if they are in poor health.—*Miss Gertrude Edwards.*

Correspondence.

RECORDS OF PRONUNCIATION AND VOCABULARY.

Dear Sir,—I suggested in a recent lecture that it would be very valuable to have some records of the pronunciation and vocabulary of the children who enter our elementary schools. It would enable those concerned with the improvement of speech to know exactly what difficulties have to be

faced. At present the only records we have refer to individual children who have had the advantage of learning their speech in a cultured environment. If there are any teachers who would like to undertake work of the kind suggested, I shall be glad to hear from them, and to give them such help as I can.—Yours faithfully,

WALTER RIPPMANN.

45, Ladbroke Grove, London, W.

Notices and News.

An Inter-Colonial Conference and Exhibition on National Health, organised by the VICTORIA LEAGUE, will be held in London, from May 18th to 21st, 1914. The object of the conference is to effect an interchange of knowledge between the different countries of the Empire on the important questions of (1) Housing and (2) The Care of Child Life. Under the second head will be discussed :—infancy and health, the school child, and the child as a wage-earner. Earl Grey will open the conference, and the following have already consented to act as chairmen of certain sessions : Lord Robert Cecil, M.P., Sir Edward Cook, Prof. Michael Sadler, LL.D., C.B., and Mr. Henry Vivian. For further particulars apply to Miss R. V. Gill, 2, Wood Street, Westminster, London, S.W.

"*The Progress of School Hygiene.*"—A discussion on this topic will take place at the Royal Sanitary Institute, 90, Buckingham Palace Road, on Tuesday, December 9th, at 7.30 p.m. Introducer : Dr. James Kerr, Medical Research Officer, L.C.C. ; Chairman, Sir William J. Collins. All interested are invited to attend.

A Conference of Educational Associations will be held at The University of London, January 2nd to 10th, 1914. Twenty-two societies, of which the Child-Study is one, are taking part in it. Sir James Crichton-Browne, our president, will, it is hoped, address the Child-Study Society on the evening of January 9th.

By applying to the Conference Secretary, Mr. F. Fäirman, M.A., 74, Gower Street, London, W.C., special vouchers can be obtained for cheap railway tickets (a) available from 1st to 12th January, or (b) cheap day return tickets for distances not more than fifty miles from London. Applicants must be particularly careful to state which of these they desire, and to send a stamped and addressed envelope for a reply.

N.B.—Volunteers to act as Official Stewards for the Child-Study are required. Names should be sent to Mr. J. W. Durrie Mulford, 90, Buckingham Palace Road, London, S.W.

Volunteer Reviewers.—We are glad to say that Mr. John Hornby, of Leeds, has offered to help us with the music reviews. A reviewer for Hungarian journals is still required.

Reviews.

Rearing an Imperial Race. Edited by C. E. HECHT, M.A. Pp. xlviii., 508. The St. Catherine Press. Price 7s. 6d. net.

The title of this book conceals rather than reveals the fact that it is a full report of the papers and discussions on Diet, Cookery and Hygiene in Public Elementary Schools and Public and Philanthropic Institutions for Children and Adolescents at the Conference held at the Guildhall this year. The editor has added much besides concerning dietaries, the teeth, clothing and footgear, diet of country children, a village health centre, school-feeding abroad, etc.

This is a most valuable and opportune collection of principles and practices, facts and figures, precepts and examples on the feeding of the young, and everyone interested in the matter should hasten to secure a copy of the book.

Victoria the Good; Hamlet. The Cinema Books. Pp. 62, 64. Stanley Paul and Co. Price 1s. net.

Opinions will differ about these books, but the present reviewer thinks them wholly mistaken and mischievous. Such artificial, often exaggerated, and necessarily inaccurate pictures as are used in them must inevitably mislead children, and finally lead to a rude awakening. The text and the highly glazed paper on which it is printed are not suitable for schools.

Montessori Principles and Practices. By Professor E. P. CULVERWELL, M.A. Pp. xvii., 309. G. Bell and Sons. Price 3s. 6d. net.

Probably the ablest presentation and criticism of Madame Montessori's views which has so far appeared in book form. Those who wish to be helped to understand the biological, psychological, and ethical issues involved in what Seguin calls the Physiological Method of Education should study this book. We hope to give it a much fuller notice later.

PUBLICATIONS RECEIVED.—*L'Intermédiaire des Educateurs; School and Life* (Russia); *Magazine Bulletin* (U.S.A.); *L'Educateur Moderne; Schemes of Religious Instruction* for Infant Day-Schools (Longmans, 1s. 6d. net, pp. 136); *Stories of Jesus, Jesus the Hero, The Period of the Conquest and Judges* (Headley Brothers, 1s. net, pp. 135, 136, 136); *The Life of Christ, Vol. II., From Baptism to Holy Communion, More Characters and Scenes from Hebrew Story, Little Children of the Church* (National Society's Depository, 2s. 6d., 2s., 2s., 2s. each net, pp. 384, 290, 264, 245).

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Binet's Mental Tests; What they are, and what we can do with them. II.

By W. H. Winch, M.A.

(*All rights reserved*).

In my last article I promised to describe Binet's Tests for young children, to say what modifications they needed in order to make them suitable for English children, and to indicate how we tested the tests themselves in London schools.

I selected three infant schools: one Council School in a rather poor neighbourhood, another Council School in a rather good neighbourhood, and one Non-provided School in a very poor neighbourhood. The schools were in all cases pedagogically good. We tested large samples of all the children from three to seven years of age, with one exception; for the well-situated Council School contained no three-year-old children. First of all we made a list of *all* the children of a given age. They were, of course, to be found in different classes. Then we took from twenty to twenty-five of each age in each school, taking a proper proportion from the various classes, selecting them fairly, some bright, some medium, and some dull children from each class.

One further condition was satisfied: children were chosen of every age within each age group; thus, of three-year-old children, there were children of 3 years 0 months up to 3 years 11 months, and the average age was 3 years 6 months. One-third of the actual number of children were tested by me personally, and the remainder by the head mistress of the school. Good infants' mistresses, after due instruction, are the best persons actually to administer the tests that can be found where very young children are concerned, especially if they understand how to set down exactly what the children do, and are careful to observe the precise conditions of the tests.

We worked as Binet directs; though, in the course of the research, we found, from time to time, a good many modifications to be necessary. These modifications, substitutions, and alterations will be described as we go along. *Solvitur ambulando* is especially applicable to cases like this; it is the only real substitute for mere guesswork in education. What we have especially to guard against is the notion prevalent among semi-instructed persons that child-study can be in any sense a mere series of inferences from general psychology. Always we appeal to actual fact; not that we despise theory; on the contrary, without theory as summarising and theory as speculative and suggestive, we could make no advance at all; but our theories will be based upon fact and perpetually come back to fact for verification.

Binet's own work was all carried out with children of the *classe dite ouvrière*, what we call the working classes. It is unfortunate that he did not differentiate further, for in England, certainly, and probably in France, the working class is by no means a homogeneous stratum; for among its children may be found examples of almost every grade of intelligence. I say almost, but I had better have left that word out; for genius itself is not unknown amongst them, and their talent has been abundantly manifested in university and other colleges, even though they have had to master, in addition, an alien culture and alien social habits. Back now to the tests themselves.

We shall start with three-year-old children. As is fairly well known, I am not

in favour of "school" for children of such an early age (See the research :—*When Should a Child Begin School,* by W. H. Winch, published by Warwick and York, Baltimore, United States). But we have them in school now and we may as well learn how to grade them. Moreover, the three-year-old tests will, in any case, be useful, for we may find some undeveloped children of riper years who cannot do them.

Binet's Tests for Children of Three. One of the clearest signs, says Binet, of the awakening of a young child's intelligence is the comprehension of spoken language. Of course we have to be careful in our inferences. The sentimental persons who tell you that their dogs, for example, know every word they say to them would be unsuitable as experimenters. Let any of my readers try with their own dogs. Use other words than the customary ones, keeping the same intonation and flexion of the voice, and making the same gestures (for movements, conscious or unconscious, almost invariably accompany the spoken word). Then see whether the dog does not react just as well. For a long time, children, like dogs, understand our gestures only and the intonation of our voices; the meaning of words, as words, is acquired later. The primary step, therefore, in the acquisition of verbal language is the understanding of spoken words or phrases used by others.

The First Binet Test for Three-year-old Children is given to show in the simplest way that the child understands our language. We give him some simple verbal order, one request at a time. He is interested in his own body at a very early age, so we ask him to touch those parts of his face (which is easily accessible), which he knows best. We ask him to touch his eyes, then to touch his nose, and then to touch his mouth.

We do not, be it noted, ask the child to begin to talk to us at once. It is, indeed, not always easy to induce a very young child to do anything except follow his own impulses. Binet notes the case of a little boy of four who would not speak to his teacher at all until he was permitted one day to talk to a cat. Most of *our* children talk to cats quite spontaneously; their language is largely interjectional and exhortatory, still it *is* talking, and I have not found in English infant schools the difficulty Binet mentions, though a little delay is sometimes found at first. Patience and gentle insistence will always overcome it.

Binet notes that a child, instead of pointing, will often open its mouth or put its nose forward. Some English children do this too. Instead of touching its features the child will frequently shut its eyes and open its mouth. This should be noted; but the experimenter, with insistence, can usually prevail upon such children to touch them afterwards.

One further indication of primitiveness, not noted by Binet, is often shown by three-year-old children. They will touch with the palm of their hands or with their closed fists rather than with their finger. But what generally were the results of this simple test? All the English children of four, five, six and seven years of age passed this test quite successfully, as indeed the three-year-old children did also, though some of them at first showed the primitive characteristics which have been referred to above.

Binet's Second Test for Three-year-old Children is the repetition of a sentence of six syllables. It is a test of spoken language, easier for the child, Binet says, than to take the initiative, and to pass from an idea to the word or sentence expressing it. Of course, meaning operates, for the child can remember and repeat a longer sentence of which it knows the meaning, than one whose meaning it does not know. The meaningful sentence is naturally one which is more familiar either as a whole or in its parts, and familiarity may account for the whole difference. It may not, but that is a subtle theoretical point into which I cannot enter now. Suffice it to say that the sentences should be short (six syllables) and their meanings should be well known.

I should personally add a further crite-

rion, namely, that the sentence should bear one connected meaning. Binet's sentence *Il fait froid; j'ai bien faim* (six syllables) does not fulfil this criterion. But it is, of course, not with French sentences that our English children were tested. We used the following :

1. May I go out to play?
2. My mother has a hat.
3. I want my dinner soon.

With shy or nervous children we need to lead up to these sentences with words or short phrases, such as "Boy," "My dolly." Then the sentences are to be said, one by one, by the experimenter, slowly and distinctly, and the child is to be asked to repeat them, one by one.

In commenting on this test, Binet states that faulty pronunciation is not a sign of want of intelligence at this age. I am more than prepared to admit that no child should fail *in this test* because he cannot articulate; but I cannot admit that faulty pronunciation is not a sign of non-intelligence. On the contrary, I have long thought of adding a test for children based on articulation alone.

Every experienced teacher knows that errors of articulation persist among dull children even up to a late age. Many children leave school still unable to articulate and pronounce certain English sounds. German children show similar defects, and so do American children. Of French children I have no personal knowledge, but it seems unlikely that none of their stupid children should show the same characteristic. However, we must note Binet's opinion and pass on, for his children of three were better than ours in this test.

He says we must not tolerate any kind of error, and that children of three can repeat quite successfully sentences of six syllables. Well, from the very first we had to relax somewhat for our three-year-old children. We allowed two (instead of three) sentences repeated correctly as a "pass." Even then our three-year-old children failed. Only fifty-two per cent. could do the work successfully; I am quoting from the figures of the school intermediate between the best and the worst. Every child spoke, but many of the children gave confused sentences, and many rendered the last part of the sentence only.

The test was, therefore, considered too difficult for English children of three years of age, and in my rearrangement of Binet's Tests for English children I have placed this test as suitable for boys and girls of four years of age. At this age all our English children could pass the test and repeat all three sentences correctly. In this, and, as we shall see later, in other linguistic tests also, our English children are behind the French.

Binet's Third Test for Three-year-old Children is also a test of memory, or what is now often called perseveration. The child is asked to repeat two numerals after the experimenter. The numerals must not be consecutive and the experimenter must allow half a second's interval between them. Three sets of two numerals are given, and Binet allows one correct repetition out of three to "pass." He tells us that for French children this is a much harder test than the foregoing. It is mere brute memory, unaided by connected meanings, and therefore is more difficult.

Our English experience is quite contrary to that of Binet with French children. Every child of three and over, in fact, every English child tested, in every school, could do this test, though we required two correct answers out of three, instead of one. Whereas in the previous test our English three-year-old children largely failed, whilst the French children succeeded, in this test our English children succeeded better than the French, though my "pass" standard was higher than Binet's.

This is not due to any difference of pedagogical instruction, for none of our three-year-old children had had any instruction in number any more than the French children had. Perhaps our children "lisp in numbers" (in another sense than Pope's) at an earlier age than the French children : their arithmetic later on is certainly superior.

Binet's Fourth Test for Three-year-old Children involves a description of or the enumeration of simple objects in a picture. Binet's pictures are, in my judgment, too ambitious and too adult for young children. I have found *Das Frühstück* (The Breakfast Picture) first used by Professor Marie Dürr-Börst, and subsequently by Professor William Stern, to be quite one of the most suitable; but any simple picture of domestic life will be found satisfactory.

This is another language test, but differs from the preceding linguistic exercise. The child, when asked to point out his eyes, his nose, his mouth, heard what was said and passed from the word to the thing. He now has to pass from the picture to the word, a much more difficult proceeding. If we had to depend upon a single test for children this, so far as young children are concerned, would, in the hands of a skilled experimenter, be one of the best we could use. For it is a test both of perception and interest. We see what the child notices, and we note the complexity of his description or the absence of complexity. But Binet probably over-estimates the value of the test when he says that, by means of it, we could tell whether a child is at a three, or a seven, or a twelve-year-old mental level. Certainly we can tell much; and I suggest to any teacher who wishes to get the full value out of my description to take, one by one, some children of every age from three to seven, and, without prompting them, to write down what they say and study it afterwards. Show the picture and ask the child to point out what it sees and say what it sees.

At three years of age, which is all we are concerned with just now, the child is in the enumerative stage; he names several things which he sees in the picture. This "passes" for a child at the age of three; but I ought to say that, though all our English children passed, very few of them pointed to or named anything in the pictures except people, and even then they only enumerated them; they gave no description of them, nor did they say what the people were doing.

At four, five, six and seven years of age, every child enumerated objects as well as people. Even the four-year-old children advanced beyond the three-year-old ones, for *all* of them at that age enumerated chairs, flowers, plates, etc., as well as people. After this age the children definitely passed beyond the stage of mere enumeration; for even the five-year-old children gave a description of a kind which involved a good deal more than a mere enumeration of persons and things.

Binet's Fifth Test, and Last, for Three-year-old Children is concerned with the child's name, not his Christian name, nor the "pet" name by which he may be called, but the family name. He tells us to say to the child, "What is your name?" If the child gives only his first name, for example, "John," say "John what?" or "What else?" or "What is your other name?" Binet says that all three-year-old children know their first name, but they do not *all* know their family name.

Of the English three-year-old children who were tested eighty per cent. were able to give their surnames. Those who could not do so would simply repeat their Christian name and say nothing more. At the ages of four, five, six and seven years every English child knew its surname.

Binet gives no further tests for three-year-old children. One of his tests, as I have already explained, was found too difficult for English three-year-old boys and girls, and has been placed by me among the four-year-old tests. On the other hand, some of Binet's tests, to be described later, are suitable for our younger children. It was interesting to see the smiles of confidence and superiority with which our older children answered these three-year-old tests; and even our children of three were usually very successful.

But how does Binet draw the line for practical guidance? Roughly and for the present let me say that if any three-year-old child fails in more than one of the tests which I have retained, including one more Binet test (for four-year-old children) yet to be described, which I place as suitable

for three-year-old children, there is a *prima facie* case of subnormality, and the child should be examined by a psychological expert.

Of course in testing a three-year-old child in order to find its proper grading, we do not stop with the three-year-old tests, but give also those for four and five-year-old children. A clever child of three will often succeed with them, and this will help us to class him properly.

Binet's four-year-old tests will be dealt with in the next article.

The Child's Sense of Number.

By Mrs. Alys Lucas.

The article on *Tests bearing on the Early Ideas of Number and Quantity,* by Dr. Decroly and Mlle. Degand, in the November number of *Child-Study,* must have keenly interested many mothers. Old methods of education are being overhauled and tested afresh. It is comparatively easy to cast aside obsolete forms of teaching and method, but the work of building anew taxes all our knowledge and wisdom. One thing we are learning, that all good work must have as its base that knowledge of a child's mind which is gained only by tireless and careful observation.

The very first unfolding of a child's mind is seldom available to the professional educationalist or psychologist, who must rely on us mothers for intimate knowledge of the early steps. Yet we are, most of us, utterly unprepared for this work; we have had no training in scientific method, and we have not grasp enough of the whole problem to know where light is most needed.

The paper of Dr. Decroly and Mlle. Degand not only opens up for us a field in which little is known and where workers are badly needed, but suggests definite ways in which we mothers may join forces with the trained workers. Before I became aware of their work I had been trying to understand something of the sense of number in young children, and the publication of the tests devised by these Belgian workers prompts me to attempt a short account of the methods which I am using.

The main point in which my tests differ from theirs is in the range of faculties tested. Even a brief examination will show that their tests may involve in their successful performance ideas such as those of pattern, of mimicry and of duration, in addition to the pure sense of number.

Anyone who knows children is aware how short a time they will concentrate on any occupation, how very few observations can be made on a child at one time, and how seldom the favourable opportunity for study will recur. Since a great mass of observations must be gathered on each point before we can be at all sure of our ground, it is clear that each worker should attempt one question only at a time; this is our only hope of success. When this point is granted the real difficulty of the problem begins. If we are to study one faculty alone our tests must be so devised that they do infallibly give us information on that one point and no other.

The aim of my own experiments has been to study a child's sense of number, while avoiding the complications introduced, for example, by the association of a definite pattern with each number. It is only too easy to overlook such possible errors. I began by wondering if playing cards could be used. Might I show my boy a card and ask him to select another one like it? It occurred to me at once that the conventional pattern formed by the pips would impress him first, and he would simply look for a card with a similar pattern. Perhaps it may be of interest to others to hear how I solved my difficulty.

I bought several dozen specimen boxes, round metal boxes, two inches in diameter with glass lids, then I bought a box of beads. Into three boxes I put one bead apiece, into three two and so on up to ten. I took one set of boxes containing one to ten to one end of the room, leaving a duplicate set at the other end. Then I said to A. (3 years 8 months), "Will you be the carrier and take your pony and cart and go into the town for me?" (we live in

the country, and the carrier figures largely in our life). A. brought his horse and cart to me for orders, I showed him a box holding three beads, and asked him to buy me one like it. Off he ran, and I heard him say, "Pony, we must fetch blue and yellow beads."

Here was a serious fault; it was the colour of the beads he noticed, not the number. Hurriedly I changed them for haricot beans and the game went on; this time he understood at once what I wanted. I give a sample record chosen at random.

Number shown.	Number brought.
4	4
7	7
9	6
11	9
8	8

While he was counting the beans in the boxes which I was showing him he was obviously careless with the numbers 7 and 11. He counted one bean over twice, then I simply asked him to count again, and he corrected himself. The small list of numbers shown illustrates my point as to how slowly we are forced to work in gathering information. Five to seven numbers is the average for one game.

Already at this early stage of our enquiry a curious fact appears. My boy uses two distinct methods of counting. In dealing with four or less beans he can recognise the number by sight, that is to say he glances at the box and says at once there are three, or four, or he goes off in silence to fetch a duplicate box. With numbers above four he removes the lids and enumerates the beans one by one, touching each with his fingers and saying one, two, three, etc. This point may be very significant, but much more evidence must be collected before we know the meaning and range of these two methods.

The whole performance, as gone through with my boy, takes a long while. The pony must be duly fed and groomed and rested before he will go into the town again. Luckily now he has invented the plan of sending some boxes by "telephone," which involves rolling them on their edges across the floor to me.

The length of the proceedings grew tiresome at last; this was seriously added to because when he came to the row of boxes intent on selecting a box containing four or any higher number he would apparently form no idea from merely looking at the beans through the glass lid of any box, whether they were likely to be the right number.

He would take the first box, remove its lid, count, and find it held seven beans; the lid must be put on again and the next box tested until he happened on a box with four beans. So now I have slightly altered the game; instead of duplicate boxes there are empty boxes waiting for him, a pile of beans and a spoon, and he ladles the required number into a box with much pleasure.

Needless to add, I sit pencil in hand and record the results on the spot.

This experiment seems to me, so far, to be very satisfactory; I believe it honestly tests number and no other power. All chance of pattern is avoided as naturally loose objects take up different positions each time in the box. Children like the game and apparently do not weary of it. There is next to no expense involved, pill boxes, even match boxes, will serve the purpose; if they have no lids the beans must be sorted out afresh each time.

I have tried the experiment with another small son of two years seven months. The first result, which I have copied out, was unexpectedly good, viz.: Number shown—Number brought: 1—1; 3—3; 2—2; 4—4; 3—1*; 3—3; 4—4; 2—2; 3—3; 4—4. (*In this case he put in three and turned them out, saying, "No, I will just take that one.")

The numbers of correct answers cannot be attributed to chance, and yet I have tried six different times since and I cannot get him to play the game, the mere joy in pouring beans from box to box seems too strong. If it were not for this first test I should not hesitate to say that he could not understand what I asked of him.

In conclusion may I point out what an excellent game this plan of carrier is? We play with duplicate colour cards and

match colours in the same way either directly or by memory; we do it with Montessori insets, carrying the memory of the shape of a hexagon across the room and selecting one from the confusion of circles, ovals, pentagons and octagons.

With town babies the game would have to take a slightly different form, for they have no knowledge of the functions of a carrier, but any mother could adapt this principle to her own children.

Evidence about other children would be most interesting. My boy appears much quicker at numbers than the child quoted in Dr. Decroly and Mlle. Degand's paper. I believe mine is nearer the average. He had received absolutely no teaching before in number, he only knew the names in sequence up to ten. Will not other mothers try this game and let us have some more evidence on the subject?

The Logical Reasoning of Infants.

By J. J. Webber, B.A.

The reasoning powers of young children are admittedly weak, but on investigation it will often be found that within their limited experience and knowledge they reason very plausibly. They rationalise puzzling and contradictory phenomena to their own satisfaction; assume causal relations between contemporaneous unconnected events; and frequently invert cause and effect.

The following instances are selected from a record which covers the period from two to four years old in the case of the boy mentioned in a former article. My earliest notes deal with that easy generalisation associated with an infant's small vocabulary when "gas" is the term applied to flame of all kinds, sunflowers, the sun and moon, while rain, pools of water, and the sea are included under "bath"; the lolling tongue of the butcher's dog is bacon, and a medal hung on a ribbon is a penny on a flag (23rd-25th month). It is surprising how limited the points of likeness sometimes are, e.g., a friend's child at the age of two called hayricks "motor buses," and the shop sun-blinds "feeders" (i.e., bibs).

Sometimes the apparent anomalies of language are corrected. Referring to events of the previous day, my boy said, "I beat—I beat," then he paused; "I bet him with a stick," and a friend tells me of a little girl who complained to her mother of a tickling in her ear. The mother said, "Oh, I expect it's some wax." "No, mamma, only one *wack*," replied the little precisian. On arriving at Paignton one summer, Jack, aged three, in spite of his constantly hearing the correct name, persisted in referring to a Mr. Sandford as "Mr. Paignton." This was very puzzling until we happened by chance to hit upon the following explanation. We had spent the time immediately preceding this at a village called Sampford, and it was clear that, as the names Sandford and Sampford sounded identical to him, the boy reasoned that a Sandford could, of course, only belong to Sampford. Therefore at Paignton it was a mistake to call a man Sandford, so his name was corrected accordingly.

Misapprehension of the facts or superficial acquaintance with them often leads to curious conclusions. In his 32nd month, while passing along a road near the railway, he noticed that the telephone poles and signals appeared to move onward as he did. He implored me to stop them. "They're *all* coming home with me, and there isn't room for them in the garden!" He made the modest request that a motor car should be purchased for him ($3\frac{1}{2}$ years) and was put off with some remark like, "When my ship comes home." Not at all discouraged, he proceeded to explain how the money could be obtained. "Go to some shops, mamma, and put down the money to buy some things, and the shopman will give you the things and a *lot of pennies*."

His experience of shopping was that the number of coins returned to the purchaser was nearly always greater than the number handed to the shopkeeper, therefore, ran his relentless logic, "To make money, go shopping."

In spring he was interested in the tiny pears which lay on the ground under the pear trees. To him the rational course of events was for a pear to grow large and eatable, hence his remark, " I suppose these little pears are having a rest, and then they will go up into the tree and go on growing again ($3\frac{1}{2}$ years).

The use of analogy in the following case was not unreasonable. Being warned not to play with a knife owing to the danger of cutting his finger, he said, " If I did cut my finger off, it would grow again." " What makes you think that? " said his mother. " Because my hair grows again when the barber has cut it off " (4 years). " I'm going to try and win a scholarship, Jack," said an elder boy to him one day. " And will you sail it in the brook when you've got it? " was his immediate inquiry.

Perhaps the most interesting instances are those where a causal connection is inferred between two unconnected events, or effect is mistaken for cause. He is convinced that the wind is caused by the shaking about of the trees, and thinks consequently that the best place to fly his kite is where large trees grow. The lighting of the gas being associated with nightfall he reasons that the latter is caused by the former and has often said, " Don't light the gas and make it dark " (28th month). On the few occasions when he has been playing in the garden at the moment of lighting up, he has stopped his play and run into the house at once. One of his former amusements was that of " blowing the dickies off the fence." He blew : they vanished. QEF. (30th month).

During his little games of football he always called his opponent " Charlie ! " in very vigorous tones. I suspected that he did not know it as a Christian name as he applied it indiscriminately, and it turned out that he had heard a footballer shout thus to a fellow player, and assumed that it was one of the terms of the game. Basil, I found, was his shout when playing cricket, and I obtained his own explanation of it. " I shout it to H—— when I want her to hurry up with the ball." Such were his inferences made while watching the games in the recreation ground at the period $3\frac{1}{2}$-4 years.

Sometimes a sudden consciousness of inconsistency makes him correct himself. He had been looking at his reflection in a pocket mirror, and having finished this he laid the mirror down saying to the reflection, " You sit down there little boy by yourself : no, by *myself* " (32nd month).

So, too, more recently, sitting at the table with pencil and paper pretending to write a letter to his auntie, he said aloud, " Dear auntie, will you come up to see me? " Then, after a pause, " She says no she can't, mamma," then another pause, and, " That's a funny thing, knowing what she said, before she gets the letter," and he laughs heartily at having discovered the incongruity ($4\frac{1}{4}$ years).

In conclusion a personal reminiscence may be related. A certain hawker in the town where the writer lived as a child had introduced a new method of attracting attention to his wares, by blowing long, solitary, and startling blasts on some kind of horn. I was passing along on the pavement when I heard this rousing sound close at hand for the first time. At that instant I looked up at a house which stood a little way back from the road and noticed, what I had never observed before, a " dummy " window, i.e., a space painted black, with a white border in imitation of a window frame. Without a moment's hesitation I concluded that this result was mysteriously caused by the action of the sound of that horn on (some) ordinary windows, and to my mind, this was confirmed when I noticed other " dummy " windows in the town.

Collecting Singing Games.

By John Hornby.

" In jugging hare," says an old cookery book, " first proceed to catch your hare." In studying singing games first catch your games. Some years ago the writer was present at a gathering where a speaker of national reputation as a folk

song collector was urging the importance of garnering the old songs before it was too late. The way to do this apparently was to find some remote village, enter the village hostelry, produce large quantities of tobacco, dispense copiously of ale and bid the yokels sing. Now the collector of singing games need have no qualms here. His gathering ground will not be among aged topers but among young children, and experience shows that the games are played most freely among the children of the common folk.

The younger the child the more freely he sings to you, and the easier is your task of collection. The average school child by the time he reaches seven or eight definitely discovers his neighbour as well as himself, and he begins to surround himself with certain barriers of self-possession, self-consciousness, shyness, etc. With some children these are more marked than with others, and would appear to be the effect of the training (conscious or unconscious) in home and school, the almost spontaneous response to repression, sarcasm, and, it may be, mockery.

Now these bulwarks have to be broken down, suspicion quietened, confidence encouraged, good will cultivated before that pleasant atmosphere can be born again in which the games are freely and joyously played and the real work of collection begun.

The earlier part of the writer's collecting was done in one district in Leeds. It may be that for some reason games have persisted and flourished there more than in other places. The smoke-laden atmosphere of the grimy parish of St. Jude would, however, hardly seem to furnish the environment suitable for the survival of the old games of the countryside. Yet the writer found close on fifty games wholly or in part existing there; and what has been done in one place may presumably be done in another. But a friend who has been visiting an Oxfordshire village says there are no singing games there. The children never sing at their play. Now that is a statement that, frankly, cannot be accepted without investigation. Did our friend quite win the confidence of the children, was she, in fact, really admitted into the Holy Place of the child's trust?

When confidence is won let the children know and see that you are interested in the old games—played till recently in back streets and by-lanes, but not in school. Show by your outward gesture and sign that to you they are pleasant things, things of beauty, joyous and worthy in themselves. For a moment descend from the pedestal of adult self-contentment. Join the game. You may make mistakes. Heed not the laughter. It is hale and harmless. And through this door of self-error you may perhaps, by sheer mirth-laden pity, be admitted to many things that else were barred to you. Anyhow you will have made a start.

In the school porch of the parish named above the writer hung a foolscap sheet and put thereon two or three names of very well-known games, such as "Here we go round the mulberry bush," "Push the business on." Then he asked for children to write any others they knew and sign their names to their contributions, and in a moment of splendid thriftlessness offered the magnificent sum of a halfpenny for every real game. This was just before playtime. During playtime that school porch was a very busy place, and soon a laughing girl ran in with, "Please, sir, we want another sheet." "What for?" "T'other's full, sir!" Two or three sheets were filled in this way.

In working through the list the first question asked of the contributor was, "What is the tune to this game?" This was a necessary precaution, because quite a number of the games so nominated were not singing games at all, but just ordinary games put down in the excitement of the occasion. Sometimes the contributor would be able to sing the entire game words through alone. Sometimes others standing by would help, and we should have a kind of choral ballad. This gave confidence. Sometimes there were little friendly altercations as to the exact rendering.

Meantime the chronicler is taking down the words, and perhaps variant lines, as rapidly as may be. By the time that is done, he will have a good grip of the game-rhythm, and also of the tune. He will set out his bars and get the children to sing the tune slowly while he gets (in sol-fa or Old Notation as seemeth him best) the whole melody. This done he will watch the game played, and take full notes of the precise procedure. Next day, perhaps he will take these notes of ritual and read them out to another class and see if they can translate them into action. This is a severe test of his power to see the game plan whole, as well as the detail of its various movements.

Sometimes he may only be able to secure a mere fragment of a game. This is not to be destroyed. It is to be kept. Occasionally it is to be mentioned and perhaps audibly brooded over. Like enough, help will be forthcoming. The little singers talk at home or among other girls, and help comes from mothers or relations, and sometimes even grandmother contributes a line, and the game approaches completion. Old folk like to talk of their childhood, and a little encouragement has once and again been the means of fresh games being discovered.

Yet these rapidly filling sheets were to the writer a revelation and a chastisement. They revealed to him that he had lived for nearly a quarter of a century in a world of comedy, of tragedy, of laughter, song and tears, and he knew it not. He had studied child nature, and in a tentative way had written of it. Yet here was the door of a temple waiting to be opened, and he had not even suspected it, or else had entirely forgotten its existence.

Apart from the value of the games as a means for the expression of the abounding joy of childhood, apart from their educational value in matters of poise and balance, apart from archæological and antiquarian value, there is one other thing that has to be felt to be realised. Such kindly feeling is engendered by this work, such doors of interest and sympathy are thrown open that one may be forgiven if one believes that here sometimes one attains that place of vision where have stood all great child lovers, from Comenius to Montessori, when they have seen, as in a flash, the beginning and the end—the great Unity.

After all, children are universal and in root essentials alike. So that after my experiences in the parish of St. Jude's I was emboldened, during holiday and other times, to try elsewhere. Sometimes with children by the sea, sometimes in quiet inland villages, in fact whenever occasion served; and by the aid of patience and sympathy—those great twin brethren—the doors opened and the children sang to me the old songs even as they had done elsewhere. Often I had to hum one or two songs first; sometimes (O guile!) I made mistakes in the very last line, was corrected, and so the position was won.

Often one heard nothing new, but just duplications with slight local variations of the games we already had. But one listened gladly. It was pleasant to hear and pleasant to be of such a goodly company. Yes, children are very much alike, so my friend of Oxfordshire has not quite convinced me, and neither has another, a well-known writer of the Gipsy Lore Society, who tells me English gipsies have no song. So if any of my readers can help me to rout the sceptics of Oxford and of Romany I shall be truly grateful.

A cursory examination of the game-tunes reveals the fact that they are diatonic. Accidentals simply do not exist. Compare this with some of the chromatic perpetrations with which infants and juniors are at times regaled. Said a young teacher, "I am going to teach this to my babies. Isn't it pretty? It reminds me of the 'Merry Widow.'" What a recommendation! Further investigation shows that nearly half of the oldest tunes lie in the octave from dominant to dominant (soh, to soh). This is strangely in line with the tonal openings, s, l, d, or s, d, r, of the most ancient liturgic music of the Greek and Roman Churches, and provokes reflection along developmental lines.

Oddly enough a thrush opposite my

window has been singing something very like this s, d, m, through half the summer. Now the oldest religious rites were practised in the open air, beneath "the most ancient heavens fresh and strong," and the children's games are the very children of the open air. Is it mere coincidence that has thrown the children's games, the old liturgic song, and the lay of the mavis into the same opening form?

Another very striking thing is the strong rhythm of the game tunes, and rhythm makes a universal appeal. Prof. Williams, in his book on the "Aristoxenian Theory of Greek Rhythms," points out clearly that when the early Christian Church banished dancing from religious rites they turned the stream of ecclesiastical invention in the direction of that polyphonic art which culminated in Bach, and at the same time in a large measure shut out that heritage of rhythmic joy, which formed such a large portion of what was to the Greeks connoted by the term music.

It is a truism to say that in the matter of rhythmic development, in the Greek sense, we are far from "advanced," and it is not too much to claim for the old singing games that they have for generations been sounding that note of eurythmics which Dalcrozé has but now taken up.

An investigation of the wording of the games reveals an essentially concrete content of earth and home and sea and sky and all the gracious commonplaces of life. This is what might be expected of that essentially "practical" period of child life to which the games make their surest appeal. In a way they reveal (yet this by omission) an apparent paganism, but it is still that old paganism wherein the gods might appear at any moment. There is all through an unuttered faith in the final righteousness of things, and a sense of that all-pervading Unity on which in the last analysis all things rest.

Should any readers essay an investigation in this rich field they will be repaid over and over again not only by the surface "finds," but by hidden and deeper things which to the student of child nature are of that final wisdom, that pearl of great price, which many good mothers possess, and many educators have longed for, and some have found.

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

So far we have spoken of the matter of the command; we have now to speak of the manner in which it should be given.

A child understands before he can talk, he guesses your thought, he reads your expression. If you do not actually desire a thing to be done, do not command it, he will feel that you are not in earnest about it and he will not obey you. For instance, suppose at the beginning of your meal you say to your little son in a half-stern, half-joking way, "Go out of the room." The child will be upset, then seeing that you are joking, or at least not seriously meaning what you have said, he will stand still and perhaps hazard an impudent little laugh. There you have a serious breach of discipline. *Never treat a command as a matter of fun.*

Again, do not make an entreaty of your command. Misguided parents sometimes say, "Now do it, just to please me." Well, why has authority been given you? Why are you parents? *You must command, not entreat.* If you bring up your children to hearing themselves asked to do things as a favour, they will think themselves always in a position to grant favours. They will seem to be conferring kindness on us, and we shall be the ungrateful ones. Whence it happens that they have rarely any gratitude towards their parents (Mme. de Saussure) and none for those who implore rather than command.

The last and most important point of all is that you *must not deceive.* Suppose your children are in the way in the kitchen and you want to get rid of them: you say to them, "Run in and see Mrs. A., you'll find your friends there." They go and find no playfellows, while you smile at your diplomacy. Do you imagine your child

has no instinct? What will become of him and what will happen to you when he ceases to trust his parents?

A command should be *serious*. This does not mean a gruff, threatening tone of voice which will make the poor little mite tremble and shake. Firmness does not preclude kindness. " A gentle firmness succeeds because it inspires confidence and respect. An angry tone is only obeyed because it inspires fear, and the obedience it obtains is as fugitive as its cause. The child knows beforehand that the storm will disperse, and that as soon as the sky becomes clear again, he will be allowed to act as he likes. It is part of a child's nature to submit to a will which appears to him inevitable, and always the same; if you are firm, the child's obedience can be depended upon " (Liebrich).

A grave tone of voice lends itself to any prohibition; *a bright and sympathetic voice leads to action.* A mother who knows how to manage always gets her own way by, " Now, baby ! " " Darling, what are you thinking of? " " Well done; what a little man; bravo ! " (B. Pérez).

" Be as eloquent as you can whenever you are talking to your children, or telling them a story, but *when you give a command be short and concise.* If you multiply instructions, you suggest disobedience, because you seem to believe in the possibility of not being obeyed; if, on the other hand, you give a concise command, you impose the necessity of submission by the very fact that you seem to imply the impossibility of resistance " (Mme. de Saussure).

4. *The way to exact obedience.* I forbid my little boy to eat raw fruit because it will make him ill. Thinking that a little will not matter, he eats some. He has done wrong for obedience which is partial is not true obedience. A child who does this makes it evident that he will obey me only so far as it pleases him. That will not suit me. I must have *full obedience.*

Children will often dawdle, even while they are intending to do as they are told. " The moments that elapse between the hearing of an order and its execution signify an act of revolt. Give your command in a few words and let it be without appeal. It is right to show gentleness in our system of education, but never forget that firmness is necessary too, and nothing calls forth consideration towards parents as much as the appreciation they show of their own rights. This is the mark which distinguishes them from all the other well-meaning folk who offer advice and warnings all day long " (Mme. de Saussure).

If we permit the child to be slow in obeying, we are doing him harm in other ways. " A child who does not readily obey, is forming a habit of putting aside everything which does not please him, of putting off till to-morrow the duty of to-day, and this is assuredly an unfortunate habit for his future " (Liebrich).

Obedience must be *prompt.* A child will sometimes try slight opposition, and it would be difficult to say just where the wrong begins. He looks mischievously at you, out of the corner of his eye, to see how you are taking it, and he seems to say, " It's all right, so far, suppose I go a step further? " This is the result of a want of seriousness in the command and a weakness in seeing it fulfilled. Let there be no hesitation in the child's mind, and no delay in his resolution. You too must show decision and determination. *Know what you want done and see that it is done.* Anything that you forbid must be given up at once, and anything that you command must be done at once. Never permit any exception to this all-important rule. How often, unfortunately, does it not happen than an act of disobedience is smiled at and passed over ! Such a disobedience is really the fault of those in authority.

If the child does not obey you, do not say anything for a moment, if you give him time to think, perhaps he will be ashamed of his ill-will. Then tell him what to do again, a little more decidedly than the first time, without raising your voice, perhaps even lowering it a little: you thus make an appeal to his most intimate feelings, to his conscience. As a

rule, you will find him eager to repair his fault. If not, you must still wait; let whatever it is remain undone and *return to the charge until you have won the day,* always without any anger or ill-humour, saying very few words but showing a resolute determination.

In time, the little rebel will see that he has nothing to gain by resisting, he will submit, and another time, knowing you to be determined, he will not even attempt a hopeless struggle...

Of a surety, there are moments, acts, and memories which mark epochs in our lives. I would try to subdue a child's will by every means other than bodily chastisement, but yield he must.

Often, instead of open resistance, a child may have recourse to artful ways. He may say, "I want to do this first." You see, he seems full of good-will, isn't he? So you give way. Another time, he is bolder, "I won't," or "I shan't." "You are surprised, you repeat your command. If the child again refuses, you lose your temper and get angry, but at the same time and this is what matters most for your child, you yield. He sees clearly that you shrink from the struggle" (Théry). Now on this very weakness of yours he will base his dominion. *You must not shirk the contest.*

Here is another weapon. "Children soon discover the weakness of the man who lets himself be disarmed by a laugh. If it is likely to answer their purpose, you will find that, instead of resisting, they will appear to be having a little fun. We must be on our guard and discourage such mischievous naughtiness by our coolness. Children, even at that age, can appreciate the feebleness of a poor joke" (A. Martin, *The Training of the Will*).

I must, then, be on my guard against mischievous coaxing or teasing ways.

"But they find out other ways still of making us abandon our resolution, the constancy of which they fear far more than the many acts of authority interspersed between periods of indulgence and spoiling. They will show bad temper, repugnance; they will pretend to shower on others the affection they keep from us, finally, they will have recourse to tears and all the expressions of heartrending despair" (A. Martin, *The Training of the Will*). Then, wounded in our tenderest feelings as a parent, we relent, alas! and give way. We ought to have gone on quietly with whatever we were doing, and disregarded the tears and temper, and everything else. Then the opposition would have promptly ceased. So, *I must not let myself be disarmed by tears,* next time they will cry less.

In a word, I shall have to face, in the first few years of my child's life, struggles stern and few, but decisive, by which my authority will be once for all established. If not, then war defeat and humiliation will be my constant portion.

Suggestions for Study and Practice.

Learning to Spell. "With Standards II. and IV. children ranging from eight to eleven years of age . . . the method with pronounced auditory and articulatory factors, as well as visual ones, and with more direction of attention by the experimenter, showed itself definitely superior to a method more purely visual and with less direction of attention. . . . We have not disproved the feasibility of success by an indirect or incidental method. But we *have* shown that when new spellings are pronounced articulatory and auditory fars to be acquired by children of this age and mental type, a method which contributes pronounced articulatory and auditory factors, as well as visual ones, is more successful than a method which depends almost wholly upon the latter."—*W. H. Winch,* "Experimental Researches on Learning to Spell," *Journal of Educational Psychology,* December, 1913.

Special Schools' Teachers and the Binet Tests. "There is, however, one type of Binet examiner who may be qualified as well as, and sometimes better than, a clinical psychologist to make these delicate differentiations. I allude to that class of trained assistants who may not have had

technical psychological training through formal studies, but whose extended experience at institutions for mental defectives has given them such thorough acquaintance with feeble-minded children that in giving a Binet test they intuitively *sense* distinctions that would escape the more astute examiner of greater knowledge but less experience. Examiners of this sort are not to be classed with those who have neither technical nor experimental knowledge of the proper use of the Binet scale, whose information has been gleaned from a Binet pamphlet or from occasional observations of testings, or even from only their own practical use of the tests."—*E. A. Doll,* "Inexpert Binet Examiners and their Limitations," *Journal of Educational Psychology*, December, 1913.

The Dependence of Mental Development on Muscular Development. "The higher type of mental action requires, as a precondition of its appearance, long and continuous experiences on the lower or perceptual plane, and within certain limits the efficiency of life, even on the higher plane, is dependent on our efficiency on the lower plane. On the whole, the people whose senses give them the most delicate indications of what is passing around them, and who are most skilful with their limbs, especially their hands, are likely on the average to attain a high standard of intelligence—to grasp a situation more rapidly, to see a point more quickly."—*Professor E. P. Culverwell,* in his book, "The Montessori Principles and Practice."

Grading by Mental Tests. *Conclusions:*
1. Analogies, Opposites, and Sentence Completion Tests are again found to be exceedingly suitable types of tests for grading children in the order of their intelligence.

2. Tests of these types have been devised and show when standardized that the difference between the means of successive classes is quite marked and generally greater than their average deviations. They also show a high correlation with the subjective estimation of intelligence.

3. The tests form a speedy, reliable and suitable method by which children may be graded according to their general intelligence.

4. The more difficult series of tests give higher correlations with the Intelligence Classifications than do the easier series.

5. The highest and most reliable correlation co-officients are obtained by amalgamating the results of the several tests.

6. The thought process underlying the Analogies Test seems to belong to a later stage of development than those underlying the Sentence Completion and Opposites Tests.—*W. Vickers, M.Sc., and Stanley Wyatt, M.Sc.*, "Grading by Mental Tests," *Journal of Experimental Pedagogy*, December, 1913.

The Eyes and Education. "This matter has occupied for some years the attention of those in control of the public schools and much has been done to improve conditions in this respect. Of recent work that of Dr. Wm. Martin Richards, in the New York public schools, is the most striking in its results. Dr. Richards selected thirty-eight pupils from the lower grades in Schools 4 and 44, Bronx, New York, and made careful tests of the eyes, prescribed proper glasses, and saw that they were worn. Thirty-two pupils were hyperopic, two were myopic, and three had mixed defects of both eyes. He found that small errors, of the amount usually neglected, were one of the causes of failure to progress in the school work. From the reports of the teachers supervising the work of these pupils under observation one gathers the most astonishing facts. They cannot be given here in detail. It is sufficient to state that the most marked psychic and mental improvement occurred in many of the cases, and in some it amounted to a complete change in the character of the child, formerly dull or unmanageable. *M. Dresbach, M.D.,* "Ocular Defects and Their Relation to the Student," *Educational Review* (*U.S.A.*), December, 1913.

Education and Intuition. "There can be no rules for training intuition; it can only be left free to grow, and not repressed and distrusted. If this principle

is adopted in education, far less rigidity must result. Much fewer repressive school rules will be made, and text-books will greatly alter their character. Class lists and prizes will go, for both imply that intellectual or memory work is the most important affair in school life. Science will still keep its authority (it will probably be taught more artistically), but its limitations will be taught as well, and its domain will not extend beyond matter. Feeling, attitude, aim will be regarded of at least as much value as intellectual attainments. Analysing, tabulating, formulating will still be practised, but in a lesser degree, while imagination and sensitiveness to the spirit of a subject will claim more time. Intellect tends to settlement and convention, while intuition tends to freedom and spontaneity. It is by encouraging spontaneity and not crushing individuality that a more true psychology can be learned. At present our ignorance of the mind's workings, the inner feelings, and real motives, especially of young people, is lamentable. The admonition *know thyself* is as necessary to-day as in classic times, and *know thy pupils* is an indispensable maxim in education that is to be of any worth.

"Connected with the idea of spontaneity is that of creative activity. If a child's initiative is not dulled or reproved (and it takes but little to blunt or repulse the antennæ of a young soul), then it will evolve into individual creation and art, and 'there is no greater joy than that of feeling oneself a creator,' and 'wherever joy is, creation has been.' This joy in creation should have its way in education as in all other spheres."—*E. M. White*, "Bergson and Education," *The Journal of Education*, December, 1913.

Teachers and Method. "As a matter of fact the value of method as such increases with the commonplaceness of the persons who use it. The teacher of great natural capacity, the sort of person who runs the risk of being called a born teacher, should be allowed a great deal of freedom in manipulating methods, while the dull, conscientious, plodding person should be called upon to stick somewhat closely to the methods that experience has shown to be the most satisfactory in all ordinary circumstances. It is true that even the man of great natural capacity for teaching will find it to his advantage to adopt and follow a great number of general principles of method laid down by his predecessors in the profession. The study of education has now resulted in a body of principles that are of recognised validity, and are no longer matters of dispute. These must be respected even by the born teacher. But so long as he observes these he ought to be allowed considerable latitude in modifying the plans suggested by masters of method and even by successful teachers of great experience.

"A 'born teacher' with a bad method will no doubt produce better results than a commonplace teacher with the best methods available: but what about the results of the born teacher working with the best method? Why not aim at the best result possible by harnessing the best capacities with the best methods? Is there anything wrong with the principle that the born teacher should not be allowed to handicap himself with a bad method?"—*Prof. John Adams*, "The Born Teacher," *The Educational Times*, January, 1914.

The Earliest Development of Speech. "The child's means of communication are very limited. First there are simple cries without cerebral co-operation. These cries later become differentiated and meaningful, and still later are the elements of language and of vocal laughter. In language development there are three stages: First, instinctive cries and calls, followed by a second stage of playful and imitative language, when the vocal organs are the child's most delightful plaything. At this time he is concerned with making all manner of vocal sounds, original or imitative. He is soon able to reproduce certain simple sounds and then easy words. Thus speech is developed on the basis of association, memory, muscular control and imitation.

"The first hundred words and concepts are established through direct association

with objects and experiences. At the third stage, word learning, which is toward the end of the second year, the finer muscles of speech gradually come under control; until then different consonants are of unequal difficulty. Words are now learned with surprising rapidity, thirty to one hundred words a month being a not unusual rate of acquisition. At two years vocabularies range from twenty to four hundred words. At this time there is a predominance of verbs which is double the relative amount which occurs in all languages, whereas the percentage of nouns is about the same as in ordinary language (sixty per cent.). Adverbs are now also relatively more numerous than adjectives, and many prepositions and nouns are made to serve as verbs."—*E. A. Doll* (Assistant Psychologist at The Training School), "Mental and Physical Development of Normal Children," *The Training School Bulletin*, December, 1913.

The Child and the House. "The outstanding fact about the children was not their stupidity nor their lack of beauty (they were neither stupid nor ugly), it was their puny size and damaged health. On the whole, the health of those who lived upstairs was less bad than that of those who lived on the ground floor, and decidedly less bad than that of those who lived in basements. Overcrowding in a first floor room did not seem as deadly as overcrowding on the floor below. It is difficult to separate causes. Whether the superior health enjoyed by a first baby is due to more food, or to less overcrowding, or to less exposure to infection, is impossible to determine; perhaps it would be safe to say that it is due to all three, but whatever the exact causes are which produce in each case the sickly children so common in these households, the all-embracing one is poverty...Those among them who were born during the investigation were, with one exception, normal, cosy, healthy babies, with good appetites, who slept and fed in the usual way. They did not, however, in spite of special efforts made on their behalf, fulfil their first promise. At one year of age their environment had put its mark upon them. Though superior to babies of their class, who had not had special nourishment and care, they were vastly inferior to children of a better class who, though no finer or healthier at birth, had enjoyed proper conditions, and could therefore develop on sound and hygienic lines."—*Mrs. Pember Reeves*, in her book "*Round about a Pound a Week.*"

A Teacher's Sabbatical Year. "To promote the standard of teaching, the teachers of Schenectady are allowed a sabbatical year for study and travel, with one-third payment of salary. The conditions are as follows: The teacher must map out a course of study in some recognised institution of learning, and have it approved by the superintendent of schools in advance. In cases of travel, her itinerary must be approved in the same way. A teacher accepting such leave of absence agrees to teach in the Schenectady schools for at least three years. If she fails to return after the leave of absence, she refunds the amount of the salary advanced. If she leaves after less than three years' service, she refunds a pro-rata amount of the salary advanced."—"*The American Teacher*," January, 1914.

The Child-Study Society and the Constituent Societies.

The London Society.—The following are the Lectures to be held from February to May, on Thursdays at 7.30 p.m., at 90, Buckingham Palace Road, S.W.: February 19th, *Speech Defects of Children and Their Treatment,* by Dr. E. W. Scripture, of New York. March 5th, *The Sense of Humour in Children,* by Miss C. C. Graveson, M.A. March 19th, *The Dramatic Impulses in Children,* by Prof. Findlay, M.A., Ph.D. April 2nd, *The Nervous Child,* by Leonard Guthrie, M.A., M.D., F.R.C.P.—*Mr. J. Durrie Mulford.*

The Halifax Society.—During the Session an amalgamation of far-reaching value was formed with the Workers' Educational Association, and a joint series of four *Talks to Mothers* was given by Nurse Fox in the Guild Room of the Co-operative Society. The average attendance at these meetings was 38, and the expenses were met by the Child-Study Society, the Co-operative Society providing the room. It is possible that a similar arrangement for the spread of knowledge amongst

mothers will be made for next session.—*Mr. J. Arrowsmith.*

The Child-Study Society took part in the very successful Joint Conference of Educational Societies, held at London University from January 2nd to January 10th, by a meeting held in the Jehangir Hall on Friday evening, January 9th. Sir James Crichton-Browne, the President, had hoped to deliver the lecture, but found himself prevented by official engagements, and at very short notice Dr. W. G. Sleight, to whom the best thanks of the committee are due, took his place. With Sir Edward Brabrook in the chair, Dr. Sleight read a paper on "The Child and the Curriculum"; the discussion was opened by Mr. B. Dumville, M.A., and Miss Kelley, Dr. Jessie White, Dr. E. W. Grice, Captain St. John, and Mr. T. G. Tibbey, B.A., took part in it. An abstract of the lecture and the discussion will appear in the official report of the Joint Conferences.

Notices and News.

The late *Mr. Ebenezer Cooke* was known to many members of the Child-Study Society, and his sudden death in December last will be very deeply regretted by all who knew his worth. A man of great originality and ability, he had the good fortune as a boy to be educated by a Pestalozzian teacher and himself became one of the most powerful and capable exponents and propagators of Pestalozzi's ideas and ideals. His life's work as an educator was teaching of brush-work to the young and to teachers themselves. In this he may fairly be said to have been himself a Master. Though his life has ceased thus suddenly his work will still live and be his own best memorial.

Some Journal Notices.—We have three important notices to give concerning the Journal: (1) Miss E. K. White-Wallis has had to resign her post as Hon. Sec. of the Journal Committee. We owe her many thanks for her able services. (2) Mr. H. R. Crisp has been good enough to accept the post of Hon. Sec. to the Journal Committee. His address is 45, Corringham Road, Golders Green, London, N.W. All communications regarding the business side of the Journal should in future be addressed to him. (3) Miss K. G. Cash, B.A., has kindly consented to assist the Editor by taking charge of the Reports from the Constituent Societies and the Periodicals sent for review. All matter concerning these should be sent to her at 36, Hunter's Buildings, Borough Road, S.E. Annual Reports should *not* be sent for publication in the Monthly Reports of Societies.

The Index for 1913.—Owing to an unfortunate oversight the contents of the December number were not included in the Index. Luckily there were not many items in this number, and several of these were already included as to the titles. We suggest to our leaders that they should write at the head of the Index "Contents of December Number Omitted," or something to this effect. Very little inconvenience would then be experienced. The Editor thinks that the readers would probably rather do this than lose the four pages of matter which would otherwise have to be left out of this number so as to publish a corrected Index.

Lectures on Statistical Methods.—Teachers who are taking their Child-Study seriously will be glad to know, if they do not already know it, that a course of Lectures on "Elementary Statistical Methods for Teachers" began on Friday, 23rd January, at 6. p.m., at University College, Gower Street, London. The course is given by Dr. David Heron and will include the use of Elementary Statistical Methods in relation to the intelligence, health, general physique, and home conditions of school children. Full particulars can be obtained from the Secretary of the College.

Reviews.

Inductive versus Deductive Methods of Teaching: An Experimental Research. By W. H. Winch. Pp. 142. Warwick and York, Baltimore, U.S.A. Price, $1.25.

This book is an "attempt to decide between the conflicting claims of 'inductive' and 'deductive' methods" of teaching. The investigations were carried out in five elementary schools in different parts of London, and both girls and boys were included in the experiment.

Not only is the investigation extremely valuable in itself, but it is far and away the best example of scientific pedagogical research, such as practical teachers can perform, which the reviewer has yet seen. It is a most helpful piece of original work, and a most excellent model for competent beginners. Every real disciple in Child-Study should give some of his days and nights to the study of this work (and others by Mr. Winch) as a preparation for personal investigation.

Still more important is it that acting teachers should seriously study such a book, for nothing could be better suited, and more likely, to enlighten and to stimulate the best and most thoughtful among them, or more calculated to give them very valuable practical help in their actual teaching.

The Purpose of Education. By St. George Lane Fox Pitt. Pp. viii., 83. Cambridge University Press. Price, 2/6 net.

The sub-title of this book is "An Examination of the Education Problem in the Light of Recent Psychological Research." The author declares that the object of his book is to urge and inculcate the lesson "to rely less upon the seen, the concrete, the physically tangible; and more upon the spiritual side of our natures, unmanifest to the flesh, but none the less real and permanent." The book is much too small for so big a task.

Handwork and its Place in Early Education. By Laura L. Plaisted. Pp. iv., 327. The Clarendon Press. Price, 4/- net.

The author writes: "This book is intended primarily for young students...and for practical teachers who work in isolation... The aim has been to give copious illustrations of actual work done by children in the hope of suggesting ideas to the reader." This aim has been admirably fulfilled. The book is packed full with theory, practice, method, models, illustrations, descriptions, detailed practical guidance, lists of books, etc. It would be difficult to make a book of its size more replete with information and instruction: it is a very encyclopædia of handwork for little children, and, as such, worthy of high praise.

The following subjects are dealt with: All kinds of paper work; modelling in paper and cardboard; light woodwork; drawing; basketry; weaving; modelling in clay and plastic material; pottery; and needlework. The correlation of these subjects with each other, and the ordinary school subjects is fully discussed and illustrated.

Teachers of infants and juniors will find it an extremely helpful book of reference.

Montessori Schools, as Seen in the Early Summer of 1913. By Jessie White, D.Sc. (Lond.). Pp. 185. Cornish Brothers, Birmingham and Oxford University Press, London. Price, 1/- net.

Mrs. White gives us just what every sincere critic of Madame Montessori's book has felt the need of: an account, by a scientific observer, of what actually happens in real Montessori Schools and others. We are enabled to understand more clearly what is meant by freedom and liberty (according to Dr. Montessori) in school work, and how the theory of sense training is worked out in practice. But there is more and better than this: there are most helpful and enlightening criticisms and suggestions. As a practical guide to anyone attempting to introduce the Montessori system it will be found a great help. It is written in a bright and interesting manner.

Teachers will doubtless feel greatly indebted to Dr. White for so good a book at so cheap a price.

L'Educateur Moderne. Prieur et Cie, Paris. 10 issues per year. 11 francs.

With the December issue M. Roger Cousinet, who has long been the editing secretary, and one of the ablest contributors, became editor-in-chief; whilst the publishing firm has changed its name. In the November issue appears a vigorous article on Feminism, Suffragism and Co-education, and a lengthy, appreciative review of Miss Hardy's "Diary of a Free Kindergarten." In the December number there is an equally lengthy translation from this book together with an account of a similar school near London, and also a practical plea for the teaching of local geography and an interesting notice of Mrs. Fisher's "A Montessori Mother."

Mon Filleul au "Jardin d'Enfants." I. Comment il s'instruit. Pp. 258 and 8 illustrations. 3rd edition. II. Comment il s'élève. Pp. 252. 2nd edition. By Felix Klein. Price, fr. 3.50 each volume. Libraire Armand Colin, Paris.

The style of these books is delightful, and they can claim, far more than most books on education, to be of fascinating interest. Essentially they are Child-Study, a careful noting of the progress of a little lad in a real school which for the purpose of the work has been somewhat idealised. The methods adopted are described, further suggestions being frequently forthcoming, and anyone of these may serve as text for a digression on the child's point of view, interests, physical needs or mental development, illustrated by many instances from observations of children, published and unpublished, showing keen insight and warm sympathy. Thus the first volume contains, in addition to a careful and minute description of the actual methods pursued, a discussion of the relation between work and play, of the age at which reading should begin and of the Froebelian gifts, whilst the second considers such questions as imagination, the educative value of games, discipline, punishments and rewards, and the relation between authority and initiative.

Eugenics Review. January, 1914. Price, 1/- net.

Professor McDougall, of Oxford, in an article on *Psychology in the Service of Eugenics* points out that experimental work in connection with the mental life of individuals and classes of society is likely to yield results of great value to the science of Eugenics by: (1) The analysis of complex mental powers in individuals and comparison of the results. (2) The detection and measuring of differences of mental endowment in the various classes or strata of population. (3) The study of mental heredity through the application of mental tests to large numbers of near relatives of the same and different generations.

He regards children as especially valuable subjects of study along these lines because the younger we take our subjects, the more will native endowment predominate over the influence of special training and experience in determining degrees of proficiency. And, fortunately school children from the age of about 11 or 12 years are in other respects excellent and convenient subjects for such investigation.

Publications Received.—*The Journal of Education; The Educational Times; The Parents' Review; Journal of Experimental Pedagogy; Moral Education League Quarterly; The Journal of Educational Psychology (U.S.A.); Educational Review (U.S.A.); The Training School (U.S.A.); The American Teacher (U.S.A.); The Pedagogical Seminary (U.S.A.); L'Education Familiale; La Revue Psychologique; L'Enfant Jardin.*

Child-Study.

The Journal of the Child-Study Society.

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Binet's Mental Tests; What they are, and what we can do with them. III.

By W. H. Winch, M.A.

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Before commencing my account of Binet's Tests for children of four years, I wish to answer two questions which have been put to me more than once during the last month or two. "How," it has been asked, "do you manage to do these patient and lengthy experimental investigations during the rush of inspectorial work and its multifarious duties?" The answer is easy. All the work now being described was done when I was able to give my whole time and energy to it.

The second question was one put to me by teachers. It ran thus: "I wish to try some of my children, how shall I enter and keep the results for each child?" I have expressly dealt with this in my form for testing children, published by Ralph Holland, of Temple Chambers, E.C. I cannot reproduce it here, since the work is copyright; but a dozen of the forms themselves may be obtained for a shilling or two. One form is required for each child tested. It should be kept, and the child tested in subsequent years to measure its progress in intelligence. Now to my more immediate task for this month.

Binet's First Test for Four-year-old Children is concerned with the child's knowledge of its own sex. The experimenter is required to say to the child, "Are you a little boy or a little girl?" If the child does *not* answer, Binet says it is admissible to break up the question and say, "Are you a little boy?" When the child has answered this, the experimenter is to follow with the question, "Are you a little girl?" It is well, I think, *always* to ask the three questions, and in this order; for by so doing we minimise the likelihood of a mere guess. More than 60 per cent. of our English children of three answered correctly. Those who did not would sometimes say, "I'm Willie," or "I'm Annie." When asked, "Are you a little boy?" some would say "Yes," and when this question was followed by "Are you a little girl?" they would again say "Yes." They are anxious to please, and probably take the question suggestively.

At all ages above three years, all the English children tested answered correctly, often with a smile at the experimenter's stupidity in asking them a well-known thing like that. The test has been retained as suitable for English children of four years.

Binet's Second Test for Four-year-old Children is concerned with the perception and naming of common objects. Binet is of opinion that this test is much more difficult than the naming of persons and things depicted pictorially. For in a picture the child chooses what he pleases to name, and picks out the things whose names he knows. But in this test we place the thing in front of the child and ask him to name that thing and no other. French children who were unable to name the things which Binet presented often succeeded in enumerating things from the pictures. He used a key, a closed knife, and a sou (halfpenny) and asked the child to say what they were. To pass the test on Binet's standard the child was required to name all the objects correctly.

In English schools we used a key, a table-knife, and a penny. Poor children have often never seen a pen-knife, and we did not think it profitable to ask for the

name of something the child might never have seen. For our "pass" standard every object had to be correctly named, with the exception that "penny," or "halfpenny," or "farthing," or "money" was accepted as the name of the coin. Binet also accepted some slight deviations from accuracy, and, notwithstanding, found this test suitable for four-year-old children, and decidedly too hard for most of his three-year-old children. Our experience is not the same. Every English child of four, five, six and seven years of age could name these things, and 96 per cent. of the three-year-old children could also name them. One three-year-old child who could not do so insisted on calling a knife a "fork," but mistakes or omissions were practically unknown. I have, therefore, regarded this test as suitable for three-year-old boys and girls, not for four-year-old children, as Binet does; and it is placed No. 5 on my form.

Binet's Third Test for Four-year-old Children is a test of memory or perseveration, more difficult than that which is given for children of three. The experimenter now repeats three numerals instead of two. The numerals must be non-consecutive, and must be said with half-a-second's interval between them. Three sets are given. Binet's standard, which I have retained, requires two sets out of three to be repeated correctly. At three years of age, somewhat over 50 per cent. of our English children "passed." Some repeated the first and last numbers only, others put the middle number last, and some substituted other numbers for those given. At all succeeding ages every child could successfully repeat numerals so far as required by this test.

Binet's Fourth Test for Four-year-old Children deals with a comparison and judgment of length. To carry out this experiment two lines must be drawn with ink on paper or cardboard. The lines must be five and six centimetres in length respectively. They must be parallel and three centimetres apart, and neither end of one line should be exactly under the corresponding end of the other. Binet asked, "Which is the longer line?" But, as he says himself, the child at this age rarely comprehends the meaning of "la plus longue," so we, in defiance of grammar, asked, "Which is the long line?" Little children say "long line" and "short line," not "longer line" and "shorter line"; long and short are terms of comparison to them, as well as adjectives of positive degree. How do the children succeed with this exercise? A stupid child will put his fingers in the space *between* the lines, or point with much hesitation. And there is an additional difficulty with the assessment of this test, which Binet does not mention. A confident child dashes at it, and, by chance, puts his finger on the right line. He has made no judgment of length at all, but mere "assurance," as he well knows, may pull him through. How can we avoid this? We turn the paper or card on which the lines are drawn in different ways, and present the problem five times, in each case asking, "Which is the long line?" If the child answers correctly four times out of the five he is regarded as successful.

English children at three years of age are not very proficient with this test, and not 50 per cent. could manage it; but at four years of age more than 80 per cent. could do so, and every child older than four was successful; so the test has been retained by me as suitable for a four-year-old test for English children.

Binet gives no more tests for four-year-old children; but in my rearrangement and modifications of his tests there are five tests, for a test in counting, which he gives later on, is placed by me among the four-year-old tests, as in this aspect of mental life the children of our schools are more proficient than the French.

In my next article I will deal with the Binet tests for five-year-old children.

The Psychology of Writing.

By James Drever, B.A., B.Sc.

(*Lecture delivered before the Edinburgh Child-Study Society*).

The subject on which I was originally asked to address the Child-Study Society was the "Psychology of Spelling." In working up this subject, however, it was gradually forced in upon me that the psychology of spelling was in the main, and contrary, I think, to general opinion, inextricably bound up with the psychology of writing, and only to be approached through the psychology of writing. I therefore decided to ask the secretary if she would oblige me by changing the title of the lecture, not because I did not wish to undertake a discussion of the psychology of spelling, but because I felt that there were several preliminary points to be dealt with in connection with the wider subject, before the position with regard to spelling could be cleared up. And, as you will see, the change of title does not involve an entire change of subject matter. Another inducement leading in the same direction was the interest at present manifested in the Montessori Method, one of the special features of which is the treatment of writing.

As you are aware, Madam Montessori establishes the mechanical processes involved in writing, apart from writing itself, and by utilizing the play interest succeeds in getting these mechanical processes established at a very early stage; she further teaches writing before, but in close connection with reading, using in both cases the language interest, that is the relation of the word to a meaning that is significant to the child, to secure motivation. I may say that I am sufficiently unorthodox as to believe that in these cases her work is entirely on the right lines. I am afraid I shall be thought rather heterodox in other respects also, for I am inclined to hold that neither writing nor spelling can or should be taught except with meaningful material; that writing copies are of very limited value in the teaching of writing, and may in some cases hinder rather than help; that the visual image is probably of minor significance in spelling, as compared with the vocal and manual motor complex and as compared with the meaning, and several other heresies of a similar description.

For most of these beliefs I hope to be able to show at least some ground, though it is almost needless to say that you must not expect a full and adequate discussion of writing in the limits of a single lecture. All that I can really hope to do is to indicate the chief problems which arise, and the direction in which we must seek their solution. Incidentally also, and for the benefit of those who feel disposed to distrust psychology, I hope to be able to show that the psychologist can throw very considerable light on this branch of school work, and can afford guidance which ought to materially assist the teacher. Only it is the teacher, and not the psychologist, who, by the help of the methods of the newly developed experimental education, must work out the practical methods.

In a lecture like this there are three main topics which call for discussion:—In the first place the development and psychological nature of language in general and of graphic language in particular; in the second place, the psychological analysis of the processes of learning to write, and writing itself; and in the third place, the experimental investigation of writing which is more pedagogical than psychological, at present being zealously prosecuted on the Continent, in America, and in this country. The chief points of educational significance will be indicated as we go along.

1. *Development and Psychological Nature of Graphic Language.* In each of his three excellent discussions of language, in the *Analytic Psychology,* the *Manual,* and the *Groundwork,* Stout has pointed out that the essential function of a word is to fix the attention upon a meaning. Because of this, we can, through language, control our own thinking, and also the thinking of others, so that language becomes both an instrument for thinking with, and at the same time a means of

communication. In this fact also we have a sufficient explanation of the language interest of children, for to the child language is from the beginning an instrument by means of which he carries on his engrossing occupation of making himself intellectually at home in his material world, and making himself at one with his social world. This implies that it is unnecessary to assume any special language or glossic instinct to explain the child's interest in language, though there may of course be such an instinct, in which case the child would have a further interest impelling him to the acquisition of language.

In his *Analytic Psychology* Stout goes on to point out that language performs this characteristic function because of its origin in "a simple association by contiguity" between a sound and a percept. The sound has no integral connection with or dependence upon the percept, but is merely associated with the percept as a whole, so that not only does it tend to be revived on the presentation for a second time of the object, but its occurrence is independent of the presentation, and therefore it may be employed in the absence of the object itself to reinstate the image of the object, to enable the individual, that is, to think about the object. The association by contiguity is not essential to this process, and is only true of a conventional language or of the acquiring of such a language. The same function can obviously be performed by the imitative gesture, with which language must have originated in the race, and which has more than an association by contiguity with the object.

Another important point in connection with language, which Stout emphasizes, more particularly in the *Manual*, is its relation to the motor element in experience. "Perceptual process," he says, "is penetrated through and through by movement." Besides the movements which are made in the attainment of practical ends, there are movements of adjustment of the sense organs, movements of exploration by sight and touch, and so on. In the ideal recall of perceptual experience these movements, or rather the motor images of them, tend also to be reinstated. This fact cannot be gainsaid even by those who would deny the fundamental position of the motor element in all experience. The motor element is of peculiar significance because of the extent to which we can control it.

In fact our control over imaged movement is analogous and proportionate to our control over actual movement. And, since the revival of the motor element tends to reinstate in idea the original experience, our control over motor imagery means control over imagery in general. Oral speech is but a particular case of this motor control, and similarly with graphic language or gesture language. In all its forms language is a system of expressive signs, by means of which we control the course of thought in ourselves or in others, and our control over it is due to the fact that the motor element is fundamental in it. From the point of view of education this would seem to be of the very first importance.

Another fact which appears to be of first rate importance for education is the relation of language to meaning. By calling language a system of expressive signs, we bring out this relation, for there are other kinds of signs, for example, demonstrative signs, suggestive signs, and substitute signs. With the first there is no difficulty. A demonstrative sign, which merely indicates an object, is not as such language, but it may easily become language if used in a context to express a meaning, when it becomes an expressive and not merely a demonstrative sign. With regard to the others matters are slightly different. A suggestive sign is a sign by means of which an object, act, or idea is brought to mind, but when the sign has suggested its meaning, its entire function is performed and we have no further need to attend to it. A very good example is the tying of a thread round your finger or a knot on your handkerchief in order to be reminded of something at some special time.

A substitute sign, on the other hand,

is a sign which saves us from thinking about the meaning, which can enter into combination with other substitute signs, and be manipulated, so as finally to bring out some result which is significant. Arithmetical and methematical symbols are the best examples of such signs. The function of an expressive sign is to enable us to think about a meaning, but we always think about the meaning through and by means of the sign. Further, a mere word or series of words apart from meaning is not language; is, in fact, merely a succession of meaningless sounds. The unit of thought is a single definite meaning, and the corresponding unit of language is a sentence. We may, of course, have a sentence in a word, but a word that has not a place in a sentence, in a context of meaning, is not language, and is therefore not even a word.

The origin of language in the race must be looked for in what we may call a magma of imitative gestures and sounds, and in this magma we have probably also the origin of pictorial art. Graphic language must be regarded as the developed imitative gesture, oral speech as the developed imitative sound. In the course of the development several striking phenomena, which are more or less important for education, have manifested themselves.

Stout, in his *Manual*, gives an admirable illustration of the kind of situation in which the earliest beginnings of language must have arisen. "Suppose," he says, "that A and B are co-operating in some important work. It is B's turn to do something and A's to wait expectantly. B either fails to do what is required of him or does it wrongly. Suppose that A has no conventional language to express himself in, or even that he has not used language of any sort until that moment. If he is capable of ideally representing what he wants B to do, he can scarcely fail in his impatient eagerness to make movements indicating what is required. It may be sufficient to point to some object actually present. This does not, strictly speaking, involve the use of language. But if he uses a truly imitative gesture or combination of imitative gestures, then his action is the birth of language. He may, for instance, point to a rope and imitate the act of hauling. The imitation of the act of hauling is simply his own idea of hauling issuing in actual movement."

Natural gesture language will always tend more or less rapidly to become conventionalized, chiefly by abbreviation. Even in such cases there is always the possibility of reverting to the original natural gesture in its fulness and detail, when the abbreviated gesture is not understood. This is so because the language has at its basis a single formative principle, that of imitation. But a natural gesture language is incapable of ever becoming purely conventional, because of this same formative principle. Precisely the same holds of the imitative gesture graphically or pictorially represented. How then can we account for the fact that we have such conventional systems in the finger language of deaf mutes, on the one hand, and in nearly all written languages of the modern world on the other? The explanation we must seek in the relation of both to oral speech.

The imitative sound in the primitive language was capable of a development of which the imitative gesture was incapable. Sounds have a far wider range, are under more perfect control, and are independent of several conditions, as, for instance, visibility, on which the use of imitative gesture must depend. Sounds, therefore, tended to become more and more the dominant part of primitive language. Further, the imitative gesture is distinctly restricted in its application to general ideas. For instance, it is easy to express, say, table or chair by an imitative gesture, it is not so easy, but not impossible, to express articles of furniture, but to express the general concept thing would seem quite impossible, and still more such a concept as existence.

Hence as the power of generalized thought developed oral speech became more and more necessary as the instrument of thought and expression, and the real development of language took place

along the line of oral speech. But the imitative gesture was not discarded. In the earliest stages of language development it was still necessary to help out the meaning of oral speech. In the later stages, as graphic language, it was seen to possess certain advantages which oral speech does not possess, as, for instance, when one wished to speak to the absent or to future generations, and because of such advantages it was retained and developed as another medium of expression.

As far back as we can go in the history of any civilisation we find two language systems, oral speech and graphic language. But before the civilisation has developed very far, we always find the two systems becoming one language by the subordinating of the graphic signs to the oral speech. This very interesting and significant change will be best understood by reference to the actual development of graphic language.

The earliest stage of graphic language is the pictographic stage, where the ideograph, like the imitative gesture, represents a certain object, act, or idea, by depicting fully or in an abbreviated form that object, act, or idea. At this stage graphic language is quite independent of oral speech. At this early stage of culture, an individual may describe in oral speech eked out with gesture, let us say, a hunting expedition to his fellow tribesmen, or when they are absent may leave a record for them on stone, or wood, or bark, in the form of pictures which relate the essentials of the story. These pictures may be comparatively accurate, detailed, and realistic, or they may be abbreviated and conventionalised ideographs; in either case graphic language and oral speech are quite independent of one another, the pictures not representing the story in the word form at all, but simply in the meaning form.

But on this basis the power of expression of graphic language in the direction of generalisation is, as we have seen, limited within a rather narrow range, and moreover another limit to development in this direction is fixed by the fact that the complexity and obscurity of graphic language will be constantly on the increase, as the number of experienced objects which must be represented increases. In this case development is only possible by the graphic sign becoming a phonogram instead of an ideograph, which immediately involves the subordination of the system of graphic signs to oral speech.

We can easily see how such a development might take place. Let us say two ideas are expressed by the same sound (as in our case of "son" and "sun"), but they are at first represented by different ideographs. They may, however, obviously be represented by the same graphic sign, as by the same sound, provided the context can be relied on to keep the meanings distinct. With a primitive, and perhaps monosyllabic, language the context in very many cases could not be relied on, but even under such circumstances, the expedient of attaching a key sign to distinguish each of the meanings of the same phonogram, might be adopted. The key sign would itself be an ideograph of higher generality.

This is the stage of development which the Chinese language represents at the present day, and it therefore marks the transition from an independent graphic language to a graphic language which is strictly and wholly subordinate to oral speech. For the phonogram is no longer a graphic sign representing an idea but a graphic sign representing a sound, though the key ideograph remains as a relic of the previous stage. The representation of proper names might also be cited as another obvious bridge from the independent to the subordinate graphic language.

The subsequent development of graphic language is entirely dependent on the reflective analysis of oral speech. With a polysyllabic language (Chinese is monosyllabic) there would be very little need for the key ideograph, and there would be a tendency to take the further step of representing each syllable by a phonogram. This the Japanese have done, borrowing for the purpose the necessary number of

Chinese characters. The result of this reform is a very great simplification of graphic language, for the number of distinct syllables which require to be represented will be very much fewer than the number of distinct words. A still further simplification is obtained by representing the phonetic elements of spoken words (either the consonantal elements alone, or consonantal and vowel elements alike) by definite characters. This progress towards the simplification of graphic language by the more complete phonetic analysis of oral speech has received a check in comparatively modern times chiefly as a result of the introduction of printing and the spread of the ability to write, but this tendency towards movement in a reverse direction, which is really a tendency of a different kind, need not concern us here.

Our attempt to trace the development of graphic language yields another point which is also of first rate importance for education, which we might express briefly as the primacy of oral speech. The relations of writing have been too often forgotten in the past. As a matter of fact it has not even been taught as language, but as something independent. Psychological considerations, and considerations arising from the study of the development of graphic language, would seem to be entirely against such a method of treating writing. Writing is first of all a form of language, and secondly it is the graphic representation of oral speech. When the child is learning reading and writing he is engaged with the two sides of a single process, the mastery of graphic language. The two subjects cannot be separated, but writing ought logically to come first, and in the closest relation with oral speech, and, as we have already seen, with meaning.

2. *Psychological Analysis of Processes of Writing and Learning to Write*:—Let us now, in the second place, spend a little time on the consideration of the psychological nature of writing itself as a process, in order to get some light on the process of learning to write.

In adult writing we have, first of all, a meaning defined in oral speech. The inner speech which accompanies writing can be examined by anyone, and it will be found that this inner speech carrying the meaning always goes on ahead of the writing, but seldom beyond or much beyond the end of the sentence which is being written. The thought itself, though in a vague indeterminate way, tends to pass on still further ahead. A second inner speech which controls the writing movement accompanies the act of writing each word. This inner speech is quite definitely in motor and auditory imagery; in my own case, and in the case of most others who have given me the results of their introspection, this second inner speech often takes the form of spelling some of the words, but rarely such words as "the," "of," "and," "but," and the like. Finally the words may or may not be read after writing; where they are read we have a third inner speech. Only in this last case is the visual element at all prominent in adult writing.

All this has of course a direct bearing on spelling as well as on writing, and in fact is more important from the point of view of spelling than from the point of view of the mere mechanical process, the motor mechanism, of writing. Such are, however, the results of the introspective examination of writing. Can we confirm them from the objective side, from objective data? As far as the mechanical process of writing is concerned, the nature of the control can quite easily be investigated experimentally. The part which vision plays can be determined by writing with closed eyes. As far as the mere writing is concerned little impairment is visible, but the alignment is apt to suffer, and even the attempt deliberately to visualize the lines fails to keep this right. We infer therefore that the main use of the visual factor is to preserve the alignment, and, to some extent also, the relative spacing. On the other hand, if by writing on a yielding surface, or with benumbed or anæsthetized fingers, we interfere with the tactual and motor controls of writing, there is a very different story to be told. [Etc.]

Phases of Self-Realisation.

By J. J. Webber, B.A.

"Shall we hold with Calvin that the child is naturally a depraved being, and that by hook or by crook we must take it out of him, or with Rousseau that by nature the child is good, and that nature wills the child to be a child before he is a man, and so 'let children be children'? . . . It does no good to make the child perform moral acts when it does not appreciate what right and wrong mean, and to punish a child for performing acts which his very nature compels him to do is doing that child positive injury."—*Aspects of Child Life and Education,* by Stanley Hall.

The question is hardly the simple one of a choice between Calvin and Rousseau, but the attitude of looking on such phenomena as those presented below as phases of development is the only attitude which is fair to the child. At the same time the writer is old-fashioned enough to be out of sympathy with those who advocate complete absence of restraint.

Self-realisation at the early stage seems to involve among other things for the child (1) doing his own will; (2) doing it in his own way. Closely connected with these will be found certain manifestations of egoism or self-assertion, together with personal preferences and dislikes.

The following observations commenced when the infant had made some little progress with speech.

In his nineteenth month he would say "Bye-bye" to any toy he was tired of, and also to his mother if she appeared to be about to take him from his play, while he deliberately turned away and pointed out the gas and other items of interest when introduced to a neighbour's infant. Finding his "words" insufficient, he dragged the bystander to the spot where something was to be picked up (20th month). Independence of action and opposition to "authority" were in strong evidence during the twenty-first month; he persisted in "Wa-wa" as a substitute for "Mamma" and "Dada" which he could say clearly, and one day, having left Dobbin, his wooden horse, in the garden path, he was told he must fetch it: he refused to do so, but when this was insisted on he walked the distance of thirty yards *backwards,* watching me the whole time. It was noticed too that when touching forbidden things he would say "No" to himself, and often a deliberate pause would be noticed before he did as he was told.

By the twenty-second month he had discovered that the pleasant pastime of answering in the sense desired by the questioner, often committed him to a course of action which was contrary to his real wish, so such questions as, "Would you like to go indoors now?" fell on deaf ears. At the age of two years shyness before strangers appeared, but such phrases as "Oh, mamma, I am a tall boy" (standing on hassock) were recorded, and the infant himself actually explained his failure to say "Good morning" to a visitor by remarking, "I'm a bit shy."

On being concisely forbidden to meddle with the bath-room taps he replied "Fancy you talking like that a (to) me mamma" (27th month). He would say when told to do anything, "No," or "Certainly not," but in spite of this, generally began to obey without further objection. There also appeared in this (28th) month the strong objection to new clothes which has persisted for over two years.

Some action of his had called forth the remark that he would have to be called a rough boy. His retort was, "No, I'm a little pet: that what my name." Seeing, I suppose, no reason why adults should have a monopoly of giving orders in the first person, he now began (29th month) to order the rest of the household about. I was reminded of my little acquaintance May, who, having exchanged names with her auntie so that Auntie was May and May was Auntie, refused at bedtime to change back again, to the consternation of Auntie. He showed great annoyance and refused to play out of doors when the wind was gusty, even going out Canute-like to tell it to "stop blowing" (29th month).

Considerable trouble was taken at this

stage to get him to lend or share his toys, and a direct result of this was shown one day when, seeing that I had no engine, he offered me a tin which he had fitted with a piece of string, and even went so far as to hand over the engine and take the tin himself. But this was a forced growth, and the persistence of the natural instinct will be seen below. He claimed to be a "big boy" in order to be allowed to turn over the pages of books (30th month), but a few weeks later, trying to avoid the task of picking up his "bricks," he said "No, mamma, me not a big boy yet." He showed great distress when familiar furniture was moved from its place, and in his 32nd month objected to a new cap: threw it down and said, "I've got plenty."

Indignity must not be offered to anything so intimately personal as the infant's name. He knew two horses called Jack and Tommy, but when acting as a horse he was given the name Jack, he said with some indignation, "Not *horse*-Jack—*me* Tommy." The following incident throws light on the same topic. Barbara, a little girl aged five, was passing by the Bunyan statue at Bedford with her mother, who told her some of the incidents of the preacher's life. Noticing the little girl's preoccupied air, her mother said, "But you weren't listening, Barbie." "Oh, yes I was, mamma, I understood all you said quite well—but I was just thinking I wouldn't like to be called Barbara *Bunyan* not for anything!"

In his 32nd month he was refused sugar one day, and took occasion to say very soberly, "'Sposin' you was a little boy and I was your mamma; when you asked for sugar I should give you two sugars." From the age of three onward, evidence of the acute individualistic phase was forthcoming, and this stage may be well illustrated by the following. His playmate, a little boy of 2½ years, began to play very peaceably with the wooden engine. "He's not to have it," cried the angry owner, and rushing up took it away by main force. The younger boy submitted and turned his attention to the wheelbarrow, only to be despoiled of that in the same way.

In a very short time the use of the football, cricket ball, bat, walking stick, garden roller, steam roller had been interdicted, and all were heaped up beside the wall. It was pointed out that the little boy must have something to play with, and then the reluctant owner, selecting the steam roller (its funnel was wanting) offered that. The other boy, with a lilliputian exhibition of righteous indignation, kicked the roller down the step with a great clatter, saying, "I won't then, see Jack."

The following examples, belonging to the period 4¼ to 4½ years, indicate the present trend. "I could'nt make a Noah's ark, could I?" he said, when putting that toy away one evening. "No, you're not Noah, are you?" was the reply. "But I'm the Noah of *this* ark you know," said he. One day, in making what he called a scouts' camp, he included some "ships" made from firewood and match-sticks, and persisted in calling them scholarships. His mother explained to him what a scholarship was, only to be met with a reply in which the essential parts of the explanation were embodied to prove himself correct. "Oh yes, but mine *are* scholarships, as I give them to the best scouts; they have to work for them."

Tacit assertions of independence and signs of resisting outside pressure as above, constantly appear. He asked me to show him how to fix yards to the masts of his firewood ships. I showed him, and he immediately modified the method, saying first, "I like to do it *this* way," and then adding, with a smile, "If you want a ship your way, you do it your way, and if I want it my way I'll do it my way; see dada?"

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

5. *The one way of making obedience easy is to inspire respect.*

(a) If the child is convinced that it is to his interest to obey, he will not find it difficult to yield. He must therefore obey me *with confidence*.

How shall I win his confidence? By perfect truthfulness. Suppose I tell him that, if he eats green apples, he will have a pain. He does eat them and he has no pain. Now I have made a statement and it has proved false: his confidence in me is shaken. If, on the other hand, the child, by the constant experience of many years, finds that, in the end, the obedience I have exacted from him has always been to his advantage, and that I have been right, whatever I may have said or done, then he will be induced to trust in me. Confidence arises out of success.

(b) But I can only appeal to his confidence in me when something that is to his future advantage is at stake. Most often my orders must be carried out at once, his own interest in them is scarcely concerned and the question of confidence does not arise. To what sentiment, then, can I appeal for his obedience? To *affection.* A boy loves his father: to please him he will do anything that is asked of him, at once and without hesitation. A little girl, even at the age of three, used sometimes to say, "I don't want to vex mother," and with this motive she would do whatever she was asked to do (see the chapter on the means of cultivating filial affection).

Does this mean that the motive of affection is alone sufficient at all times and with all children? No, this perpetual and exclusive appeal to affection may imperil both the child's obedience and his affection. "Amid lavish caresses, the child's attention is wholly absorbed, and he frequently loses sight of the deed to be done, the means of doing it and the motive for action. He makes up his mind unthinkingly and just as the caprice of the moment takes him: he knows beforehand that the result will give pleasure. The mothers who adopt this form of spoiling their children really bestow the rewards of their words and smiles on good temper and a desire to please and take no account whatever of the merit of the child's own effort of will. They command by way of intimating, suggesting, when they do not actually implore. Commands prompted by feeling are certain to end in contradictions. Such a mother, when forced to give a command repugnant to the child, is most unhappy at the opposition she arouses and, because *she* is hurt in her feelings, blames the child for lack of feeling when his real fault is disobedience. These conflicts between the child's will and the mother's love entail inevitably moments of temper and vexation of mind: thus a loss both of authority and friendly understanding" (B. Pérez).

(c) This result will not happen if parents make a point of inspiring respect as well as affection. The child whose sole motive is affection will obey whenever he feels inclined; the child whose motive is respect will obey always, whether he wants to or not. He will not even think of resisting. *Respect is the basis of complete obedience.*

But what exactly is this respect of which so much has been written, and how is it to be inspired? Note first that there is no true respect where confidence and affection are wanting. There must also enter the element of fear, not a shrinking, servile fear, but that moral fear which is felt in the presence of a superior; it is in this way that respect arises. We shall inspire the sentiment of respect first by inspiring confidence and love, then by showing ourselves really superior to the child by always requiring the same things, by a steady firmness which will compel his will to yield to ours, by harmony between father and mother, by being always just and truthful so that, in the child's eyes, our will stands for justice and truth.

This last thought leads to another. Must my child respect me because I am I or because it is his duty to do so? Parents of an earlier generation would unhesitatingly reply that the respect was due to them. I take a lower stand but make a higher claim. I do not say to the child, "You obey ME," and nothing further. Suppose I die, then is there no one the child must respect? No, I want the child to see in me something more than myself, that is, my position as his father, or in other words, *his duty to be obedient to his parents.* So I shall be indeed great in

his eyes, he will respect me more, for behind me he will dimly perceive the great law of duty. He will become aware that a command from me is not a matter of caprice, but that I myself am subject to a higher law. We shall not be simply two, the one who commands and the one who obeys; there will be a third, namely Duty, who is above both, *the child obeys his parents, his parents obey the law of Duty.* That is the supreme lesson. If this idea forms part of the child's consciousness, and it can do so (see the chapter on conscience), it will be more effective than all the homilies, rewards and punishments that can ever be conceived.

To conclude, we have to acknowledge an idea and a feeling, *the feeling of respect* and *the idea of duty,* in these lies the foundation of obedience. The child will want to obey because he knows he must; this is the part of the intelligence. This wish to obey will be supported and strengthened by his filial respect; this belongs to the domain of the feelings. When the heart and the mind are at one on the object of desire, there is always sufficient force of will to attain it.

6. *The child will be anxious to obey if he understands the reason of the command.* Must I then say, every time I give a command, "You must obey me because it is your duty." No, I should even degrade the word *duty* by so frequent and unnecessary a use of it. Or again, may not this feeling of respect tend to replace the child's act of will? If such were the case it would be a grievous misfortune. The child must (a) do what we require and (b) want to do it of his own accord. How are these two positions to be reconciled? "A child of six fills me with fear," writes Mgr. Dupanloup, "he has a will of his own, and this will may be opposed to mine." Yes, and if my will is opposed I shall be defeated. I can subdue his body, but his spirit, in spite of himself, no. With him I can do much; without him very little; against him, nothing. *I must gain the support of his will.* How? This is the fundamental problem of education.

The other day, I was reading, with my elbows on the table. In front of me five or six youngsters were looking at some pictures, and laughing and talking quite at their ease. I smiled at them now and then, they were noisy but perfectly happy. Suddenly, after going away for a moment, I had to say to them, "Don't make so much noise." They looked up at me in astonishment, as much as to say, "Why are you disturbing our fun?" "Mama is sleeping," I explained. At once there was a chorus of "Oh!" the very expression of their faces signified understanding and they were as quiet as mice. This lasted for half-an-hour; it only needed a glance, once or twice, to keep them silent. What a tribute to the power of intelligence and mutual understanding!

A mother had promised her little girl to let her go and skip on the second floor landing, when she had completed her task. The child finished everything, took her skipping-rope, full of eager anticipation. "I did not think of it," said her mother, almost immediately, "our neighbour on the first floor has a bad headache, will you not give up the skipping?" At once the child, who was only nine years old, put away the rope and came back, without a sign of ill-temper. Again, what a tribute to the power of intelligence! Even a little girl of nine has voluntarily made a sacrifice, because she has understood.

If, in the two previous instances, the parent had been content with saying in a tone of repression, "Leave off playing; speak more quietly," would the little girl and the other children have obeyed so quickly and so willingly? Would not their reason have made them ask why they were deprived of their innocent pleasures? But you see, *the reasons for the commands were given,* and an understanding mind means a willing spirit. Children are like adults, "They love to be treated as rational creatures," said the wise philosopher Locke. "'Tis a pride should be cherish'd in them and, as much as can be, made the greatest instrument to turn them by."

Not only is this for their guidance but for the training of their reason; if we give simply and clearly the reason for our com-

mands, and especially for our absolute commands, the child will gradually recognise that we do not act without reason and that everything has a cause and consequences, and that our interference in his actions is not simply for the pleasure of commanding but for his guidance.

Some educators are not of this opinion. The difficulties, however, that they raise, disappear when we realise that *giving reasons for commands is not the same as discussing them.* It is this confusion which is at the root of differences of opinion on the subject. It is possible to point out, in a few words and once only for each new command, the reason; the child may neither reply nor argue; absolute obedience is to be exacted and on these two grounds, first because the command has been given, and secondly because it has been justified.

In the same way, all the advantages that may be urged on behalf of obedience without explanations are valueless in the face of the following consideration: it is not good for the child to do something without being aware that he does it. A child, brought up in this way, would, when he attains to manhood, simply be the toy of circumstances. Such a training is indeed excellent for producing slaves.

The Binet Test and the Training of Teachers.

By Samuel C. Kohs, Ph.D.

(Reprinted from *The Training School Bulletin* for January, 1914, by kind permission of the Editor.)

Those of us who have been using the Binet Scale often hear arguments against the possibility of training students during a six weeks' summer school course to apply the tests accurately. The fact is emphasised that most such students have had no training in experimental psychology and but little study in psychology proper. Binet himself remarks that no final judgment as to the backwardness or feeble-mindedness of a child ought to be made unless the person testing has examined previously forty children or more. It is claimed that the experimenter should be a trained clinical psychologist, with a good insight of the workings of the child's intellectual processes and that the teacher is among the least fit to give a psychological test.

The aim of this article is neither to support nor to attack any of these conclusions, but to make a simple exposition of facts. That one lacking experience, training and personality, will fail correctly to interpret the manifestations of our mental life no one will deny. Nevertheless our experience this summer makes us feel that sweeping generalities in the matter are not in order.

Out of a summer school class numbering sixty-two, the work of only fifty-eight will be considered, four of the class not having given us data sufficiently comparable to that of the others. Of the fifty-eight one is a social worker; all the rest are school teachers.

The Binet work covered a period of five weeks. The first week was devoted to a theoretical exposition of the tests, Doctor Goddard lecturing an hour on each of three days. The second week was given to exhibition testing, on the principle that after learning the theory the class ought to see it applied. Besides Doctor Goddard there were three research-student assistants who tested for the class. Two of these had been working in the laboratory for a little over a year, and one had been a special class teacher and a member of the summer school of 1911. Each one of these three assistants had had a good deal of experience in testing normal, backward and feeble-minded children. Every member of the class saw four subjects tested, one by Doctor Goddard, and one each by the three assistants. There were two discussion periods of an hour each during the week, at which points were raised and questions answered.

Beginning with the third week and continuing through the fourth and fifth, the students did actual testing. The class

was divided into groups of three, each student testing one child per week, each group testing three children per week. Thus each student would test one child per week and observe the testing of the two others in her group. At the end of the three weeks each student had tested three children and observed the examination of six others. Each group had a supervisor who criticised the experimenter after she had finished the test. Such matters as the method of approach, attitude to the child, time of the experiment, technique, the psychological content of a test, method of scoring, element of fatigue, etc., were gone over painstakingly with each one. Sometimes, but seldom, it was found necessary to halt the student in her work to keep her from putting a question which would hurt the child as well as the experiment.

Twice a week Doctor Goddard spent an hour with the class discussing experimental procedure. At this time the students would ask questions relative to the Binet test, and any errors which they had made were corrected. As can readily be seen the work was made as thorough as possible. At the end of the three weeks one hundred and seventy-four children had been tested. The records on each child were passed in at the end of each test and no paper was revised.

We will now proceed to a critical review of the result. The following table is arranged according to the number of children who tested at age* and one point, two, three, etc., plus or minus. For example, G. C—— tests between 8.1 and 8.3. The student found that he was 8.2. We therefore say he tested at age. Another case is that of S. G—— who usually tests between 8.0 and 8.2. The student found that he was 8.2; we say he tested at age. Still another case is that of W. A—— who usually tests either 10.3 or 10.4. The student found him 11.1; her result was two points plus. D. M—— tests

TABLE SHOWING THE WEEKLY RECORDS

(Arranged according to deviation by points above or below the exact mental age).

	No. of Points (Binet)	Total No. Tested During the 3 weeks	%	No. Tested 1st week	%	2nd wk	%	3rd wk	%
	+9	1	.575	——	——	1	1.72	——	——
	+5	3	1.72	1	1.72	2	3.45	——	——
	+4	3	1.72	2	3.45	——	——	1	1.72
ACCURATE RECORDS	+3	3	1.72	1	1.72	1	1.72	1	1.72
	+2	13	7.47	4	6.90	5	8.62	4	6.90
	+1	12	6.89	4	6 90	3	5.17	5	8 60
	0	85	48.9	23	39.7	31	53 4	31	53.4
	—1	21	12.1	10	17.2	4	6.90	7	12.1
	—2	13	7.47	6	10.3	4	6.90	3	5.17
	—3	7	4.02	3	5.17	2	3.45	2	3 45
	—4	5	2.87	——	——	3	5 17	2	3 45
	—5	6	3.45	3	5 17	1	1 72	2	3.45
	—6	1	.575	1	1 72	——	——	——	——
	—14	1	.575	——	——	1	1.72	——	——
TOTAL		174	100.055	58	99.95	58	99.94	58	99.96
TOTAL (ACCURATE RECORDS ONLY)		154	88 57	51	87.89	50	86 16	53	91.34

* Tested "at age" signifies that the students' test agreed with the correct test for the child, not that the test showed the mental to be the same as the physical age.

between 6.2 and 6.4; she was found to be 5.2; the result is said to be five points minus.

A short survey of this table will clearly bring out these facts :—

(*a*) Nearly fifty per cent. of all the work was as exact as any one of us in the laboratory could make it.

(*b*) The results of an additional thirty-eight per cent. were within three points of being exact. We may safely add these to our fifty per cent., because a variation of three points or less is not of much importance. In this we are substantiated by Binet himself, who always speaks of " a mental level of 6," or " a mental level of 9." In no place does he discriminate between a child who tests 10 and one who tests 10.4. They both possess " a mental level of 10."

(*c*) Consequently nearly ninety per cent. of all of the work of our summer students may be regarded as accurate.

(*d*) Examining the results by separate weeks, we notice that whereas only about 40 per cent. test exactly to age the first week, for the second and third the proportion rises to nearly 54 per cent.

(*e*) The acceptable records for the third week amount to nearly 92 per cent., a substantial increase over the 87 per cent. of both previous weeks.

(*f*) During the first and second weeks there are three cases varying beyond five points, but during the third week no test varies more than five points, and only three vary four and one varies five points. All the rest are accurate records.

(*g*) The number of cases three points minus is greater than the number of cases plus. One would be inclined to believe that the experimenter failed to carry the child far enough ahead. This, however, is not borne out by the facts. We have always insisted that the record must show at least five minuses after the last plus before the experiment could be regarded as complete.

(*h*) The third week's record shows the improvement due to training and experience.

The following histogram shows more clearly perhaps than the blank table the number of those who tested accurately.

Fearing that perhaps our conclusions were based on the results of a special group, the following questionnaire was distributed :

1. Before coming to Vineland did you ever use the Binet-Simon tests? If so, how many children have you tested? Mental ages? Additional remarks.

2. Before coming to Vineland were you ever given any instructions, verbal or written, on how to use the scale? If so, how much (explain fully)?

3. Have you ever had any experience in psychological experimentation? When? Where? How much? Of what character?

4. Any additional remarks.

The following were the returns :

(*a*) The number of those who never had used, never had read or been taught the use of the Binet, never had had any training whatsoever in experimental or clinical psychology was thirty-eight, or nearly 66 per cent.

(*b*) Only one person in the class had really had sufficient training in applied psychology.

(*c*) Those who never had had any training in psychological experimentation numbered 54, or 93 per cent.

(*d*) Only four, or 7 per cent., had had sufficient training in the theory of application of the Binet Scale.

(*e*) Three, or 5 per cent., had had a little such training.

(*f*) Five, or 9 per cent., had had previous explanation but had never used the scale.

(*g*) Two had used the scale for some time, one with no information on how it was to be applied and the other with but very little.

From the students' individual records we learn that :

(*a*) Five, or 9 per cent., tested all of their cases to age.

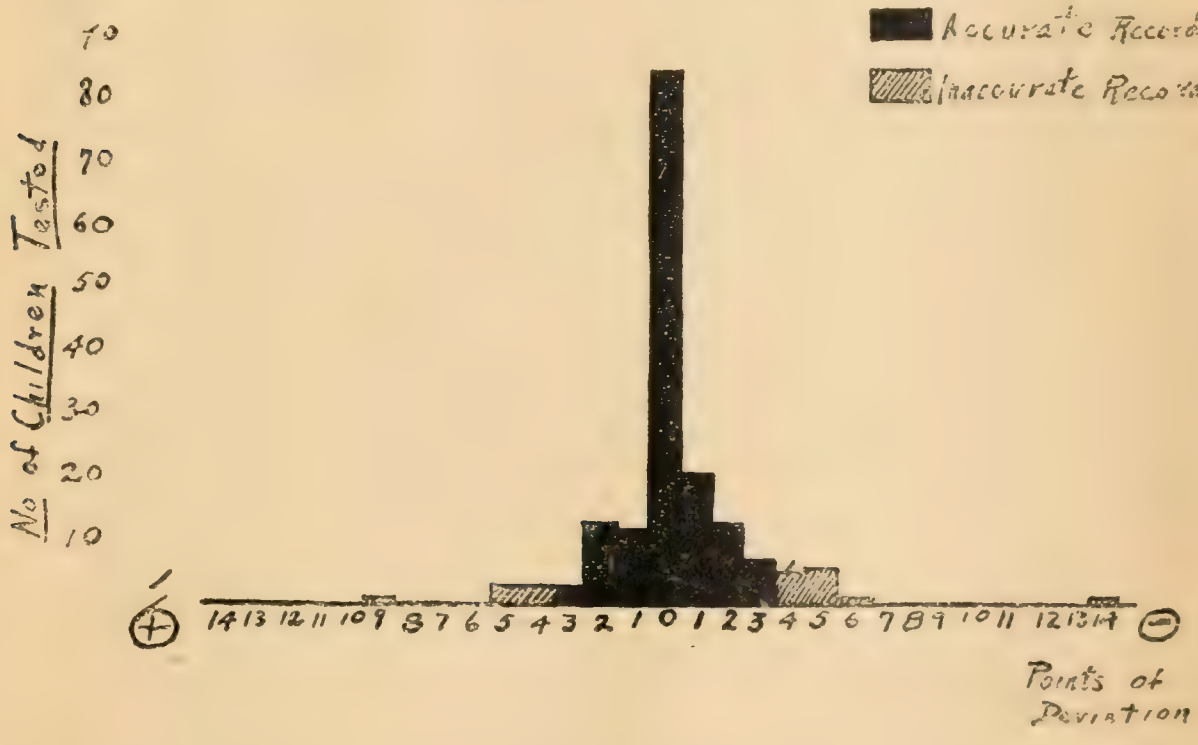
(*b*) Forty-two, or 73 per cent., tested within variations of plus 3 and minus 3, that is to say, within an unimportant degree of error.

(*c*) Twelve tested only one child three points plus. Of these, five tested the other two to age, two tested only one to age, and five tested the other two to within three points.

Comparing the records with the students' previous training or experience we find that no correlation is noticed. There were five who tested every one of their three cases exactly to age; of these, four had never used and had never read or been taught the use of the scale and had never had any training in experimental psychology; the other one had never had any clinical experience which she did possess, according to her own report, "little of it was really valuable." The one student who had received sufficient previous training in the theory and application of the tests, and also had had the additional experience of being an applied psychologist, tested the first child a year too high, although she found the other two exactly at age. The record of another lady, which reads, first child tested at age; second, fourteen points too low; third, four points too low, is that she had had sufficient education in the use of the scale and had already tested twenty children with mental ages between four and ten.

Even if we were to grant that some particular factor contributed toward raising the percentage of accurate tests to 89, and that with that factor eliminated our percentage would only be 70, or even 60, or even 50, would that invalidate our statement that a very large proportion of teachers may be trained to apply the scale correctly?

So, in conclusion, we feel safe in stating our experience that in a thorough six weeks' summer school course we can teach people who have had no previous actual experience, to use the Binet test with accuracy.



Suggestions for Study and Practice.

Co-education. "It is an open question whether or not the separation of the sexes during early adolescence does not create the very evil we are trying to avoid. Sex mystery is a most prolific source of immoral thoughts. The boy or girl who is only conscious of sex in relationship with the other is in a very dangerous position. An all-round relationship in family, social, and economic equality is the surest means of minimising sex consciousness."

—*T. Homer Lane,* "The Little Commonwealth," *Penal Reform League Quarterly Record,* January, 1914.

Detention as a Punishment. "The prevalent practice of keeping-in at resess has nothing to justify it. If the recess has any significance, that significance is its effect upon health; therefore to keep a child in at recess is to punish him at the expense of his health. A few such punishments may not injure one individual, but a school that practises such a form of discipline is to that extent an inconsiderate and unhealthy school."—*W. H. Heck,* "Parents' Part in School Hygiene," *Educational Review* (U.S.A.), February, 1914.

Child-Study for Teachers. "We must know what children *are,* before we can devise exercises for making them what they ought to be. It is of first importance for the teacher to identify herself with the instinctive impulses of the child, the true basis for all educational development. The teachers' function *par excellence* is the utilization, guidance and direction of these instinctive impulses into educative channels. . . . It is only as the teacher interests herself in the things that are of interest to children, only as she looks at things through the eyes of the children instead of trying to make the children see through her eyes, only as she thinks with minds of the children that she can adapt the process of teaching to the learning process of the child mind."—*Laura Emily Man,* "Teaching from the Child's Point of View," *Magazine Bulletin* (U.S.A.), Dec., 1913.

The Child-Study Society and the Constituent Societies.

The Tunbridge Wells Society.—At a meeting on December 1st "Defective Speech" and "The Teacher and the Child" were discussed. Mrs. Warrington, who trains stammering children, said that each case has its distinctive symptoms which need close analysis before treatment. Breath control, relaxation and easy production of the voice in the larynx, control of the tongue and the positions needed for correcting muscular defect, must all be taught. Self-control is specially incumbent where the fear of speech, acting on a nervous temperament, causes a prostration of the will and loss of normal effort. Dr. Aikin says that defects of speech due to malformation are rare compared with those due to neglect of errors and to direct misinstruction.

Humouring baby talk is a mistake and contact with others having peculiarities of speech is dangerous, from the natural imitativeness of the child. Spasmodic stoppage of the voice is checked by a few breathing exercises in fresh air two or three times a day for a few minutes only. Repeating the first word of a sentence two or three times when excited is a common fault to be checked by a reminder that a remark must be thought out before utterance begins.

Children should certainly not be scolded for stammering. They should be told what to do and not what not to do. There should be no exhibition of impatience and no reference to his defect in his hearing. Tongue exercises are the cure for inability to pronounce certain sounds.

In the discussion which followed, attention was drawn to the neglect of phonetics in schools and the toleration of a slovenly utterance. Mr. Punton Smith, President, read a resumé of Mr. Marsh's work on "The Teacher and the Child," showing that the teacher's work is to shape the "thought-world" in which his scholars live. He is building up for all time.

He also asked teachers to experiment on children and is sending the question "If you could change your personality who would you wish to become and why?" to all the local schools. It is to be written on a blackboard and the pupils given ten minutes to write the answer.—*Mrs. J. C. Pontifex.*

The Dundee Society.—We much regret to have to announce "that the Dundee Society has found it necessary to suspend operations—crushed out by the number of societies of an educational nature." We trust that there is still hope of a glorious resurrection.

Notices and News.

Parents' National Educational Union.—The Eighteenth Annual Conference is to be held at Darlington from March 9th to 12th (inclusive).

The programme which we have received is an attractive one. Perhaps the following subjects would be of most interest to child-students:

"Authority and Freedom," by Professor Campagnac, M.A. *"Four Generations of Childhood as Portrayed in Children's Books,"* by Miss Manners. *"Education in Taste,"* by Mrs. Clement Parsons.

Particulars may be obtained from Miss Parish, 26, Victoria Street, S.W.

Sex Education and Hygiene.—Miss Norah March, B.Sc., is giving a course of lectures on this subject on March 20th, 23rd, 27th and 30th, at 5.30 p.m., in the Holborn Estate Girls' School,

Houghton Street, Aldwych, W.C. Tickets, 5s. for the course, can be had from Miss Gruner, 59, Cambridge Street, Hyde Park, W.

Reviewers.—Reviewers are needed badly for Hungarian and Portuguese journals. Who will offer to undertake this work? It is of great value to those interested in Child-Study to know something of the work being done in other countries, and to those for whom the Portuguese and Hungarian languages are as closed doors capable reviewers would render considerable service, to say nothing of the service they would render indirectly to Child-Study.

Printers' Error in February Number.—In the extract on "Learning to Spell," under the heading "Suggestions for Study and Practice," the line "pronounced articulatory and auditory fars" should be omitted from the sentence beginning "but we have shown, etc."

Reviews.

Handbook of Information for the Use of Helpers. Manchester City League of Help. Pp. 194. Sherratt and Hughes, Manchester. Price 1/-.

To social workers, philanthropists, and the benevolent, this handbook should prove of great practical value. It is a full, clear, and thoroughly well compiled list of public and private societies and institutions dealing with social and charitable work in Manchester. A short and lucid analysis of the scope and method of work is given in each case. The constitution and working of the League of Help is fully set forth.

Section "III. Children" occupies twenty-seven pages, and includes a summary of "The Children Act." Much might be done in Child-Study in connection with the societies as mentioned in this handbook. It would be a good thing if all towns had such a handbook.

A Bibliography of Eugenics and Related Subjects. Bulletin No. III. State of New York, State Board of Charities. Pp. 130. The Capitol, Albany, New York.

A very useful list of books to those interested in Eugenics. Much of it concerns child-study, *e.g.*, psychology and diagnosis of abnormal mental states, child-study and education, defectiveness (general), feeble-mindedness, sex hygiene.

Eugénique. January, 1914. Price 1fr. 50c.

In this issue Dr. Saleeby gives under the title "The Progress of Eugenics" a criticism of the older methods of investigation. He discusses the value of the elaborate statistical method based upon the questionnaire agreeing with Bateson that the individual analysis of the given is essential. He dissociates himself altogether from those so-called Eugenists who adopt the *laisser faire* attitude towards human life based on a false conception of the Darwinian theory, and shows the importance of what he describes as preventive Eugenics, which involves a recognition of the influence of environment and consequently means much more than the comparatively simple process of selection in which individual acquisitions are ignored. It is of fundamental importance to the progress of Eugenics that a chair of Human Genetics be established at some university.

L'Intermédiaire des Educateurs. January, 1914. Price 40 cents.

A suggestive psychological test of the moral judgment is described in this number. Six lies of relative gravity were recounted to some members of a conference on moral education. The members were requested to arrange these lies in the order of their gravity. This involved careful comparison of one with the other before the position of each was determined. The motives for telling the lies were in most cases apparent. They were as follows: desire to shield a companion, fear, politeness, and self-protection at the expense of an innocent person. In two cases the lies were probably due, the one either to childish ignorance or imagination, the other either to boastfulness or the desire to make the best of things. The results obtained showed comparatively little unanimity of moral judgment.

Reading Made Easy. By Anna Snell. New Edition. In two parts. G. Philip and Son, Ltd. Price, 8d. each.

At the request of many teachers, this most excellent of books for the teaching of clear articulation, writing, and reading, has been reprinted. The author, Miss Anna Snell, one time Principal of the Manchester Kindergarten Training College, one of the pioneers of the kindergarten in England, and a friend of the wife of Froebel—returned some years ago to her native town of Jena, but the inspiration of her teaching still lives in the work of many of her old pupils in England.

This little book is written in two parts. The first part has an introduction explaining the author's method, "the Normal-word method based on the analytic-synthetic principle of teaching to read"; the reading matter for the children contains only words which are spelt as they are sounded; on each page a new sound is given, and there is a picture of an object the name of which contains that sound. A good point is that the text is in both the written and the printed letters.

In the second part we come to the words not simply spelt according to their phonic content. These are arranged in groups which make the spelling of them as easy a matter as is possible, and each group is followed by a story into which the words are introduced.

The method of teaching is a pleasurable stimulation to the intelligence, and most helpful in dealing with defects of speech.

The Penal Reform League Quarterly Record. January, 1914. 4d. post free from the Secretary, 68a, Park Hill Road, London, N.W.

This publication contains several items of in-

terest. Amongst others a report of a conference on the treatment of women prisoners, and of a conference on the Court of Rehabilitation, at which latter Mr. Osborne, the Chairman of the New York State Commission on Prison Reform, gave a very interesting address. There is also a report of alleged grievances with regard to the Camp Hill Preventive Detention Prison; but perhaps the most interesting feature of all is the account given by Mr. Homer Lane, at the annual meeting of the League, of the development of self-government amongst boys and girls at the little commonwealth in Dorset.

Expectant Motherhood; Its Supervision and Hygiene. By J. W. Ballantyne, M.D., F.R.C.P. (Edin.). Cassell and Company, Ltd. London, New York, Toronto and Melbourne, 1914. Price, 6/-. Pp. 227.

From many points of view it is desirable that books which deal with the various phases of sexual hygiene should maintain a high level of scientific and literary dignity. We can safely say that it has been well maintained in Dr. Ballantyne's new book on "Expectant Motherhood," a work which is frankly dedicated to the lay public.

Social and health reformers have for some years past directed much attention to the causes which conduce to physical inferiority. Beginning with the school child, they were logically compelled to seek for more essential causes, and soon turned to the infant as a more fruitful field for research. Recently attention has been concentrated on the infant during that critical period which immediately follows birth. Eugenists look even further back and indefinitely forward, but the work at present hardly comes within the sphere of practical politics. Dr. Ballantyne has long insisted that the ante-natal life of the child is even more important and requires more skilled attention than the post-natal life, and he has practically created a new science, Ante-Natal Hygiene. This cinderella branch of medicine has for the most part remained a hidden and an unknown subject even to most medical men, but Dr. Ballantyne, by the publication of this invaluable little book, has revealed its secrets so that they can be easily understood by any person of average intelligence. The work of schools for mothers must in the immediate future largely concern itself with the teaching of ante-natal hygiene to expectant mothers. Up to the present there has been no authoritative book which could afford to social and health workers the required information. Dr. Ballantyne's little book exactly satisfies this long-felt want. We congratulate both him and the public on his achievement.

Infant Care and Management. By E. L. Maynard. Pp. 110. E. J. Arnold and Sons. Price, 1/6.

The purpose of this text-book is to provide the teacher whose business it is to instruct school-girls in infant care with practical information in a convenient form. The importance of pre-natal conditions, the chief causes of infant mortality, the conditions essential to a healthy infancy, are all discussed, and detailed instructions are given as to the management of the daily life of a baby.

There is a brief bibliography, in our opinion inadequate considering the importance of the subject.

Caring for Baby. By E. L. Maynard. Pp. 62. E. J. Arnold & Sons. Price, 3d.
Price 3d.

This is a little book of good print intended for girls who are receiving instruction at school in the care of infants. It is written in clear and direct fashion, and should be useful to those who believe that the question of infant mortality is to be partly solved by instructing in the duties of a mother children just crossing the borderland between childhood and adolescence.

We, however, believe that the inclusion of a subject in the curriculum of a school for any other reason than that it supplies a need of the children at the particular stage of development they have reached, is unjustifiable from the point of view of Child-Study.

L'Enfance Anormale. December, 1913. A monthly international review published at 23, Rue Claudia, Lyon. Price, 1 fr.

The number for December, 1913, opens with a "Causerie" by M. Louis Grandvilliers, the principal editor. Then follows a very interesting article on experiments in the giving of evidence, in which the abnormal do not compare very unfavourably with their normal fellows, but the numbers of subjects examined are too few to make the results of any statistical value. Dr. A. Laurent has a paper based on a recent work, "Les Arriérés Scolaires," by Dr. Nathan and M. Durot, in which a just tribute is paid to the late Dr. Bourneville, of the Bicêtre, who did such great work for the education of the mentally defective.

There is news of progress in France, Switzerland, Germany, Italy, Belgium. Our readers will be specially interested in the charming account Mme. Lorentz gives of a visit to the Home School, Highgate, which she has written for this review, because, in the work of the normal children there, she found realised in the happiest manner the ideal of what a school for the abnormal should be:—observation of immediate surroundings, animals, and things; well-chosen manual occupations; open-air life.

Reviews of papers and books are followed by a programme of work for special schools drawn up by M. Arthur Nyns, an inspector of schools in Brussels.

Publications Recived.—*The Journal of Education; The Educational Times; Secondary Education; Parents' Review; Kindergarten (Berlin); Child Life; School Hygiene; L'Education Familiale; Educaçao (Lisbon); The Penal Reform League Quarterly Review; Educational Review (U.S.A.); A Gyermek (Budapest); The American Teacher (U.S.A.).*

Child-Study.

The Journal of the Child-Study Society.

Vol. VII.—No. 3. APRIL, 1914.

Editorial Notes.

Child-Study and Scholastic Papers.—The most optimistic advocate of child-study can hardly fail to have his ardour damped nine times out of ten when reading an average scholastic periodical. By average scholastic periodical is meant those monthly, weekly and other papers which are read by teachers, school officials and members of education authorities.

While the writers and readers would probably very much resent the suggestion that they were not really "educational" but mainly "school news" papers, they would also strongly repudiate the idea that to be really educational papers they should concern themselves most with the best work in child-study, *i.e.*, modern child psychology and experimental pedagogy. Indeed they take occasion, now and again, to poke fun at the psychologist who offers advice to teachers.

A good—or should we say bad—example of this attitude, showing to how small an extent child-study has permeated teachers, is to be found in *The Schoolmaster* for March 7th. In a column of snippets of news and views, which about represents the "educational" level of the paper, called "Notes from the 'Special' Schools," the writer, after a suggestion that doctors are of very little use in deciding whether defectives are able to benefit by the ordinary school curriculum, and a very ungracious and misleading reference to Mr. Winch's forms for testing defectives, remarks as follows :—

"A four-page list of printed questions cannot take the place of familiarity with children, experience in dealing with them, and a full and generous sympathy with them; and these are the requirements necessary in those called upon to test them for mental deficiency."

It will be noticed that there is no limitation or qualification in the implication that the "practical teacher" (the writer would probably say) is really the proper person to decide the question as against the doctor or psychologist. Doubtless the writer would claim that a mother is a better nurse for her child than a trained nurse, and indeed a better judge of its physical nature than a doctor, notwithstanding that common experience, common sense, and scientific knowledge are all to the contrary. This is rule-of-thumb *in excelsis*, and it is no reply to say that what the teacher meant is a "trained teacher," since none of the special qualifications of a trained teacher is claimed as fitness for the work.

A still more significant passage appears a few pages later in an article summarising the whole of "The 'Montessori' Method" in less than two pages. It reads thus : *"If we recognise that education is a science in which original research is essential if that truth is to be discovered which shall form the foundation of the teacher's art or craft, then we must admit that original research on truly scientific lines is almost unknown, and that anyone who like Dr. Montessori will conduct researches on such lines deserves high commendation even though the results may be negative."*

Nothing less than printing the passage in italics seems to meet the need of expressing the surprise and pain that a

student of child-study must feel on reading it. The amazing conditional "*If* we recognise that education is a science," as though Bain had not written his *Education as a Science* (1878) nearly forty years ago! Still more amazing is the admission (forsooth!) "that original research on truly scientific lines is almost unknown"! Has the writer never heard of Seguin, Stanley Hall, Lloyd Morgan, Thorndike, Binet, Claparéde, Meumann, Spearman, Brown, Winch, and scores of others who have been doing such work for the last twenty years or so? Why there are probably at least a hundred scientists working out, in university laboratories, the scientific bases of education.

Perhaps the gem of the passage is the exquisitely painful combination of ignorance and patronage implied in the statement that "anyone who like Dr. Montessori will conduct researches on such lines deserves high commendation *even though the results are negative*" (our italics). Language fails to express a just criticism on this: only profound silence can express it.

Even the "Occasional Notes" writer in the admirable *Journal of Education* (March 2nd) permits himself to forget the teachings of experience, and the need of scientific training and knowledge for teachers, in his comments on the Board of Education's latest scheme for pupil teachers, for such it really is, in secondary schools. The writer argues that "the able and more thoughtful of our young teachers [should go to a 'staff college,' *i.e.*, a training college] after they have had a few years' experience of school work and have got some idea both of their own weak points and of the weak points of the education that their school gives."

How, we would ask, can those who have presumably had no previous training whatever in education—even the writer only expects "the teacher in training will learn the rudimentary technique of his craft"—be expected to learn such profound truths? Moreover, if they can so learn them, what has an ordinary training college got to teach them, which would be worth, say, two or three years to learn?

Finally the writer says: "We clearly cannot expect training colleges for all; may we not, however, hope for one for the best of our men?" If these be the hopes of those who should be the leaders, what can be expected from their followers, and from those members of the public who control the public purse and nearly always discount the claims of teachers by at least fifty per cent.? Besides there are already several training colleges or departments (including those at Oxford and Cambridge) which offer training to men who intend to teach in secondary schools!

Would the writer, or even "the man in the street," accept the contention that a satisfactory way of training doctors would be to let young men begin by working under unqualified practitioners, for a year or two, and only the very best of them go afterwards to a "staff college" (a medical school) to be trained—one such college to provide for the whole country? Possibly this writer also would say that education is not a science, and decline to admit that tending the mind is comparable with tending the body.

Educational Research Societies.—But there are cheering signs that the child-study leaven is beginning to leaven at least the top of the whole lump of the educational world. Members of the London Teachers' Association have started a research society; the Teachers' Guild have held a very representative conference to consider the forming of a society to deal with educational research; and a meeting was held at the London University recently, and a committee of inquiry appointed to consider what could be done to further educational research. We congratulate the London Teachers, wish them every success, and hope they may rival, and even outshine, their confreres at Leipsic (see *Child-Study* for March, 1913).

Child-Study and the Board of Education.—In a circular issued by the Board of Education, on the staffing of schools, dated March 9th, 1913, it is stated that, "after careful consideration," the Board intend "*to restrict the future recognition of new supplementary teachers to infants' classes in rural schools or departments*, and to the lowest class of older scholars in such schools, provided that the average attendance does not exceed 100." That is to say, in cases of the youngest children who, because of their ignorances and inabilities, need the highest and best knowledge, skill, power, and experience on the part of the teacher—who has to work in circumstances which are the most trying and exacting, not only because of the difficulties due to the great diversities of age, acquirements of abilities in a small group of children, but because the staffs are generally lacking both in quality and quantity, and the premises poor if not unsuitable—in such cases only will the Board sanction the worst type of unqualified teachers! Another case of the Board of Education *versus* Education!

Child-Study and the London University.—It is interesting to find that the University of London has conferred a doctorate on Mr. P. B. Ballard for a thesis entitled "Obliviscence and Forgetfulness," a child-study investigation. But why was it a D.Lit. and not a D.Sc.? Do the London University authorities not know that psychology is a science; or was it that the charm and grace of style of the thesis made them suppose it was a purely literary effort? We are confident the grace and charm of style were there, but this does not explain the action of the University examiners. Anyhow, we offer our congratulations to Dr. Ballard, and look forward to many other child-study investigations by him.

Binet's Mental Tests; What they are, and what we can do with them. IV.

By W. H. Winch, M.A.

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Binet's First Test for Five-year-old Children deals with the Discrimination of Weights. For this test Binet used four boxes, each having the same appearance and the same volume, but of different weights. A judgment of comparison is required, just as it was with the longer and shorter lines; but this is a harder test, for, whereas the lines could be judged by inspection, the weights cannot; and it is a characteristic of dull or undeveloped children that they do not *know that they cannot judge by inspection*. Binet's instructions are: Show first two boxes of three and twelve grams respectively; place them on a table, leaving a space of five or six centimetres between them, and then ask: "Which is the heavier box?" An intelligent child will take up the boxes and try their weights, either in the same hand successively or in each hand.

To make sure we are not dealing with a mere guess, Binet says we should try two other boxes of six and fifteen grams respectively, and then try again with the boxes of three and twelve grams. In working this test with English children two ordinary match boxes were used. Iron filings were placed in them until the correct weights were obtained. The boxes were exactly of the same size, shape, and appearance, and one was as new as the other. They were placed on a table and the question was asked, "Which is the heavy box?"

To overcome mere guess work, the question was asked five times, the relative position of the boxes being changed each time while the boy or girl was not looking. The child was not *told* to lift the boxes, for the presence or absence of the idea of doing this is just what we are testing; as well as the sensibility to the difference in the "feeling" of the weights when the operation of weighing them is undertaken.

This is a very interesting test, and the teacher who tries it is asked carefully to note exactly what the child does on each of the five occasions. Of English *three-year-old children* only eight per cent. were able to find out which was the heavier box. All those who failed pointed to one of the boxes in a quite hap-hazard way, and made no attempt to lift the boxes. At *four years of age* twenty per cent. were able to discriminate between the weights of the boxes. Those who could not pointed to one box and ignored the other, and nearly all of them pointed on each occasion to the box which was nearer to their right hands. Two of the children lifted one box, ignored the other, and said, "This is the heavy box." With the exception of these two children, every one of the four-year-old boys and girls *who lifted the boxes* was able to indicate the heavier box successfully.

At five years of age, the age for which Binet considers the test suitable for French children, our English children were by no means successful. Even in the most favourably situated school rather less than fifty per cent. of them passed, though rather more were successful in the intermediate school, and still more in the school in the very poor neighbourhood. It is possible that in weight discrimination the poorer children may be better than those who come from "good" homes. In any case the five-year-old children were weak; children of considerable general intelligence for this age did not think of *trying* the weights of the boxes, and hence failed.

A five-year-old child pointed to one box and said, "It's a box of matches" (plain boxes would be better, irrelevances like this would be avoided), but made no attempt to lift the boxes. One boy who failed lifted one box only on each occasion. The experimenter, wishing to find out where the difficulty lay, told him to lift the other box as well. He then gave the right answer five times in succession. One boy picked up both boxes and shook them, but did not appear to be testing their weights. Another child lifted the boxes and poised one in each hand, balancing both at the same time: he gave correct answers. A girl lifted one box on each occasion, and appeared to think it light, for she pointed every time to the box she had not lifted. Another girl laid the boxes, one by one, on the back of her hand, tested the weights and gave correct answers five times. A boy picked up both boxes simultaneously, one in each hand, his right and left hands moving together: he gave correct answers each time. A girl lifted each box with the right hand and placed it on her left hand to weigh it.

With these exceptions the method (the usual method) of testing the boxes was to lift one box, try it, replace it on the table, and then to lift and try the other box. All the children who did this gave satisfactory answers; but, as I have said above, normally, our five-year-old children could not do the test successfully, and I have moved the test into the six-year-old group.

At the age of six a great improvement was shown, for not less than ninety per cent. were able to select the heavier box; twenty per cent. shook the boxes before testing their weight; twenty per cent., having once lifted both boxes, appeared to remember the weight of the heavier one; and, happening at the second trial to raise the heavier one first, said, "This one." One boy lifted each box in succession with his right hand and placed it upon the back of his left hand to test its weight. He repeated this five times. One girl raised both boxes with her left hand (she was not normally left handed), and answered correctly. A girl, who "failed," lifted the two boxes at the first trial and gave the right answer; but, at subsequent trials, she only pointed to the nearer box and said, "That one."

At the age of seven every child but one in every school attacked the problem properly, lifted the boxes without hesitation, and gave correct answers.

As I have already said, I have found it necessary to place this test in the six-year-old group for English children, and I have made one further modification. English schools do not always find French weights

available, so in subsequent work I used boxes of half an ounce and quarter of an ounce respectively, and I recommend their use for English teachers. The exact method of keeping the records for the individual child is shown in my *Form for Testing Backward Children*, to which I have previously referred.

BINET'S SECOND TEST FOR FIVE-YEAR-OLD CHILDREN is concerned with Observation and Draughtsmanship. His instructions to the experimenter are as follows: "Draw a square in ink, having sides from three to four centimetres in length, and ask the child to draw it in ink." He points out that this is the first test in which a penholder is placed in the child's hand; that the use of the pen adds to the difficulty of the test, and that it ought not to be replaced by a pencil. In the work of English children cited here, Binet's directions were strictly followed, but for reasons subsequently to be stated I finally decided to have the drawings done in pencil, not in ink. Binet's "pass" standard is indefinite; he gives a few drawings of "good" squares and a few drawings of "non-acceptable" ones, and tells the experimenter to guide his judgment by means of these.

In none of the schools tested had pens previously been used except by the seven-year-old children, and I assessed all the drawings myself. We found that the children of the Council School in a rather good neighbourhood had seventy-five per cent. of six-years-old passes, and those of the Council School in the rather poor neighbourhood had seventy-six per cent. of passes. In the third school (the one in a very poor neighbourhood) a pencil was used, not a pen, and the percentage of passes rose to somewhat above eighty.

Why then did I finally decide to have the drawings done in pencil, not in ink? The children were carefully watched whilst drawing. All of them tried to draw with the nib, not the holder, but many of them did not know which side of the nib ought to be uppermost, and when they found they could not make a mark, said, "There isn't enough ink," or, "I want some more ink." No teacher requires to be told that they frequently took quite a lot of ink, and made some more or less pleasing marks, but not squares. A few children, finding the pen wouldn't work equally well in all directions, turned their papers round and round and drew all the lines vertically. They ought to have had an additional mark for their intelligence, but the system of marking does not allow for that.

It was my conviction, and that of the teachers who helped me, that the pen bothered the children and interfered with the results that we were seeking. We wished to see whether the child could observe the square and approximately draw it; not, I think, whether he could deal with a new-fangled and treacherous instrument like a pen. I shall give now a few details of what our children actually did with a pen, quoting from the work of the school intermediate in character.

At three years of age only four per cent. of the children could draw a satisfactory square. Crude circles and straightish single lines, not joined and wrongly arranged, were much in evidence, and a few drew as many disconnected wavy lines as they could get done in the time. I thought at first of reproducing these drawings here; but on second thoughts I think it best for the teachers who read these articles to get the drawings done for themselves. One word of caution only: don't generalize from your results unless you have a fair sample of all the three-year-old children in your schools, and do not be satisfied until you have seen the drawings from several schools.

At four years of age there was a great advance; not less than forty per cent. of the children drew a satisfactory square. Even when unsatisfactory, the shape tended to be square. The drawings, of course, varied much; but of those which were not squares, rhomboids and rectangles were the shapes most frequently drawn. But the sides were often unevenly balanced and overlapped one another. It is very interesting to note the order in which the lines of the square were drawn.

As I believe that our teaching of draw-

ing to-day is most unpsychologically based, no indication of a child's real attack on problems of drawing is without interest and value. No less than thirty-six per cent. of the children who drew the square drew the lines in the order indicated in the diagram.

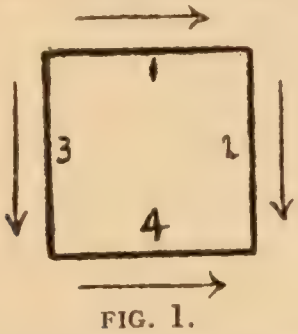


FIG. 1.

They began with the line marked 1 and drew from left to right, then drew line 2 downwards, then line 3 downwards, and finally line 4 from left to right. Twenty per cent. of the four-year-old children drew as indicated in Fig. 2.

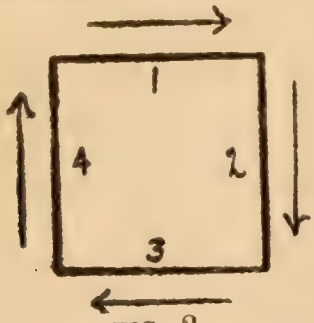


FIG. 2.

These were the abler drawings, and resembled those of the bulk of the five-year-old children. They began with a *horizontal* line (teachers will remember how we all used to begin with verticals in our pedagogy) from left to right, then downwards for line number 2, then from right to left for line 3, and upwards for line 4. Only sixteen per cent. began with a vertical line. But, again I say, "Don't take these things on trust, try them for yourselves."

At five years of age there was great improvement; this is quite obviously a five-year-old test; but there were no new features to record. Forty-four per cent. of those who drew a satisfactory square drew the lines in the order indicated in Fig. 2. Sixteen per cent. followed the three-year-old method indicated in Fig. 1, and sixteen per cent. drew thus;

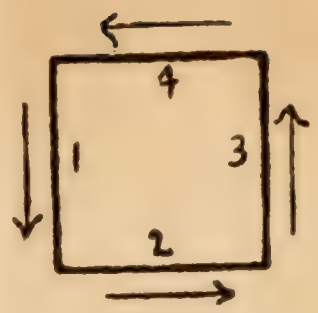


FIG. 3.

There was some increase in the number of those who drew one of the vertical lines first.

At six years of age over ninety per cent. of the English children drew a satisfactory square. There was more variety in the attack; only twenty-eight per cent. of them following the same order in line and direction. This group followed the method shown in Fig. 3. All the squares drawn by these children were observed and it was found that at this age no less than sixty-four per cent. began by drawing one of the vertical lines first.

At seven years of age there was but slight advance. These children had been taught some drawing. They had not been taught to draw a square, but when drawing objects under guidance they had been expected to begin on the left. Twenty-four per cent. of them drew the square as shown in Fig. 1 (a three-year-old method); twenty-four per cent. as shown in Fig. 2 (a four-year-old method); and twenty-four per cent. drew thus:

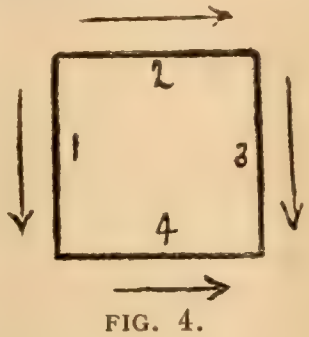


FIG. 4.

In *every* case these seven-year-old children drew the horizontal lines from left to right; eighty-eight per cent. drew the vertical lines from above downwards, and the remaining twelve per cent. drew *one* of the vertical lines in that way. Fifty-six per cent. began the drawing on a horizontal line, and forty-four per cent. on one of the

vertical lines, so that we cannot yet say that the tendency to draw verticals first is now fully established, if it ever is.

Although the squares drawn above give the direction and order in which the children drew the lines, it must not be supposed that all the squares drawn were approximately as correct as these diagrammatic ones. When shall we count the square as "good," or "correct," for we need some general criterion? I have worked on the following, and suggest its general adoption: If the drawing has four distinct sides, roughly at right angles, and is more like a square than a decided oblong, it should be accepted as satisfactory.

BINET'S THIRD TEST FOR FIVE-YEAR-OLD CHILDREN is one of the most interesting to the experimenter, and one of the most difficult of the whole series, at least for English children.

Binet says that this is a game of patience with two pieces. He directs the experimenter to take a card of rectangular shape, and another of the same size and shape, but cut into two pieces diagonally. The whole card is to be laid on the table, and the two pieces also in such a way that the two hypotenuses are as far away from each other as possible. The child is then to be asked to put the two pieces together so as to make them look like the whole card. No explanations may be given other than this request.

Binet began this experiment with a dozen pieces of card, but found that if by chance a child hit upon two or three pieces which gave the "game" a good start, the rest followed easily into place; but, if this did not happen, the problem was found too difficult, even for the most intelligent children. Consequently he finally used two pieces of card only. He found that French children of four years could not do the test, but that at five years of age scarcely one in a dozen failed. Our experience is by no means the same as Binet's. *At three and four years of age,* none of our children could do it. *At five years of age* (I quote the figures for the school intermediate in capacity) only twelve per cent. were successful; *at six years only forty-four per cent.,* and *at seven years fifty-two per cent.*

Why this enormous discrepancy between the results in England and those in France? I am aware that the French schools give early attention to geometrical form, which ours do not; but I do not think that lessons on geometrical form, except in connection with balls, cubes and bricks (as in our own schools) begin as early as five years of age. The cause of the great discrepancy is not, I believe, a pedagogical one. It is connected, I think, with the method of administering the exercise. Binet is indefinite about the placing of the pieces of card; his instructions are satisfied by two positions, one of which is easy and the other hard.

Let me explain what I mean in further detail. This is how we carried out the test with English children. The rectangular cards measured five by six inches. The two pieces of the cut card were placed in such a way that the two long perpendicular sides were parallel to and near each other thus:

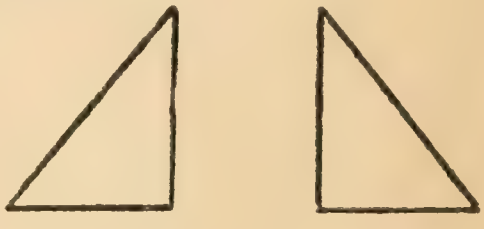


FIG. 5.

This position of the cards places the two hypotenuses outside, as required by Binet. But the position compels the child to *lift one of the pieces and turn it over* in order to build up the rectangle. The child was "passed" if he built up the rectangle four times out of five trials. As I have said, our English children found this very hard. Except in the well-placed school, they were not successful even at seven years of age, though Binet states that five-year-old children can do it.

In endeavouring to account for this difference we found that Binet's instructions could be satisfied by another and much easier position of the two pieces of card. Instead of placing the two long sides (adjacent to the right angles) parallel to each

other, as we had done for our English children, we placed the pieces so that one long side and one short side were parallel, thus :

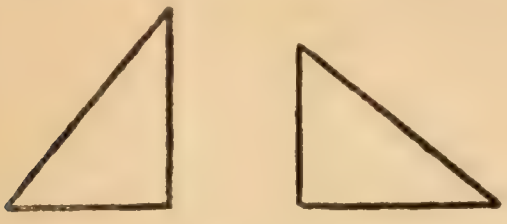


FIG. 6.

The two hypotenuses are still as far away from each other as possible, so that Binet's directions are still satisfied. But the problem is a very different one; for now the rectangular card can be built up *without turning one of the pieces over.* Not to distinguish these two positions is inevitably to confound two very different tests, one fairly easy, the other very hard.

The following are the results obtained from English children, the pieces of card being arranged in the more difficult position :

At three years of age none of the children succeeded in making the rectangle. They put the two hypotenuses together, and when asked by the experimenter, pointing to the constructed figure and to the uncut card, " Is this like that? " said " Yes."

At four years of age no child succeeded four times. Several children made the rectangular shape once, but they could not do it a second time. They were satisfied with shapes far removed from that of the rectangle. One child knew she had placed the two pieces of card wrongly, and tried many times to get them right, but could not do so. When asked, " Is that right?" she answered, " No, it won't come right." Every child at this age put the two hypotenuses together at one or more of the trials; many of them appeared satisfied when they found the two slanting lines were of equal length and that the two pieces of card fitted to one another. They felt they had achieved the desired result, though they had by no means constructed a rectangle.

At five years of age (the age for which Binet considers the test suitable) only twelve per cent. of our English children were able to construct the rectangle. Those who were wrong in all cases put the two hypotenuses together, and most of them were perfectly satisfied with the shapes they made. One girl put the two cards together five times, each time incorrectly; and, without being questioned, each time shook her head and said, " No, it isn't like it." She was unable to correct her errors. A boy who had placed the two hypotenuses together, but incorrectly, was asked, " Is it like that? " said " Yes, that line is down there," pointing to the junction of the two slant sides. I commend these observations to the people who tell us that little children measure by mass and not by lines. A girl who could not arrive at the correct form, turned the pattern card over and examined it carefully underneath; but, of course, found nothing to help her. One boy did the test rightly twice, then wrongly three times, and although he knew he had gone wrong, could not correct himself.

All of us can do some things without knowing " how " or " why " we do them, the " how " and the " why " are often matters of subsequent reflection. Especially is this true of children in arithmetic, but I must not diverge from my immediate task. Of those who built up the required shape correctly, one child only did it properly at every one of the five trials.

At six years of age forty-four per cent. constructed the rectangle at least four times out of the five trials; but even for these children the task proved difficult. With one exception every child tried at first to make the required shape by putting the two hypotenuses together without turning one of the pieces over. The children who failed to satisfy the test frequently succeeded twice but failed afterwards. They recognised that the shapes they made were wrong, but could not put them right.

One boy who could not make the rectangle at all picked up the pattern card and placed it over the shape he had made. This is the method of superposition in its primitive form. Another boy, who tried

vigorously each time, said, after the fifth trial, in a very decided tone, "I can't do it." Another boy said, "If it had another piece across here it would be like an envelope." Several of the children placed the shortest side of one of the triangles parallel with one of the short sides of the pattern card, thus:

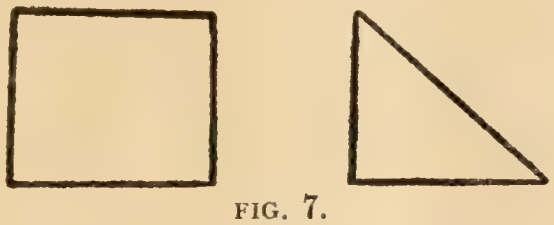


FIG. 7.

and worked on from that.

At seven years of age there was a slight advance; but only a slight one, for only fifty-two per cent. were able to make the required shape. Twenty-eight per cent. of the children put the shortest side of one of the triangles parallel to the short side of the rectangle, and worked from that, as some of the *six-year-old* children had done. All the seven-year-old children who failed to make the required shape knew that what they *had* made was incorrect, but they could not get out of their difficulties. They appeared to fail because they did not think of *turning one of the triangular pieces over.* One boy volunteered the statement that he had formed the shape incorrectly, and said, "That line goes slanting" (referring to one of the outside lines of the figure he had made) "and it ought to go straight down." Every child who failed put the two hypotenuses together at one or more of the trials, but without turning over one of the pieces.

According to our English results, we cannot be sure that, normally, children will succeed with this test under eight years of age. Accordingly I have placed this test in the eight-year-old group in my *"Form for Testing Backward Children."*

BINET'S FOURTH TEST FOR FIVE-YEAR-OLD CHILDREN is a test in counting. The child is required to count four "sous," touching them as he counts.

Binet says that an objection is often raised to this test because it shows the result of school instruction rather than of native intelligence. Binet answers by a question, "Where is the normal individual," he asks, "who has been so deprived of the ordinary experiences of life and the example of others that he cannot count simple numbers?" Binet's instructions are as follow: Place four sous on a table, touching but not covering each other. Then say to the child, "You see these sous? Count them. Tell me how many there are."

This last instruction is not a good one, for the child need not be asked how many there are; in any case he should not be asked *before* he has counted them.

In English schools we used pennies, and said to the child, "You see these pennies? Count them for me; touch each penny as you count it." Binet also required the coins to be touched correctly as the counting proceeded. No mistakes were allowed on either the French or English standard of passing; but the results were by no means the same. French three-year-old children could not do the test at all; at four years of age, only half succeeded; whilst at five only the "defectives" failed. Our children were much in advance.

At three years of age fifty-six per cent. of the children in our intermediate school (the three-year-old children in the "very poor" school scored less) were quite successful.

At four years of age ninety-six per cent. were successful (eighty per cent. in the "very poor" school) and all the children in succeeding years. Of those who failed at three years, many arrived at the fourth penny whilst saying "three." At four years of age all who failed did so because they did not give the appropriate number to the penny they were touching, not because they could not count one, two, three, four in correct sequence.

In my arrangement of Binet's tests for English children this test has been placed in the four-year-old group.

I shall deal next with Binet's tests for six-year-old children.

The Psychology of Writing.

II.

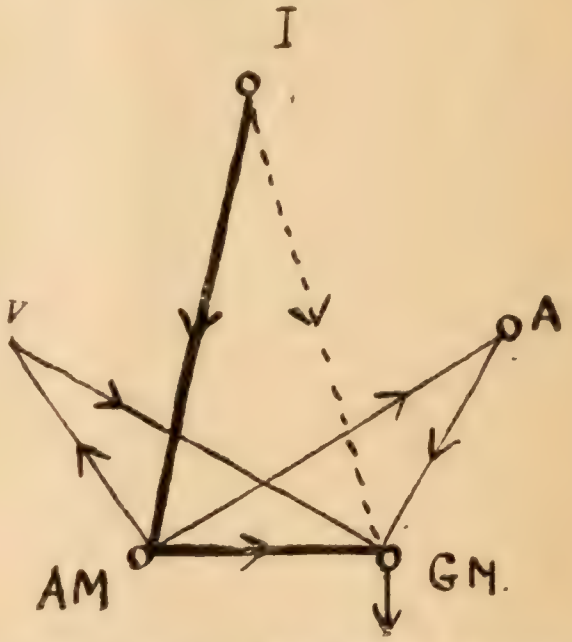
By James Drever, b.a., b.sc.

(Lecture delivered before the Edinburgh Child-Study Society).

The very simple experiment of mirror writing yields similar conclusions. If you take a pencil in each hand and try to write the same word simultaneously with the two hands, you will find that the left hand tends to give mirror writing. If the main control were visual both hands would tend to write the word in the ordinary way.

When we take a full view of writing, regarding it as graphic language and not as a mere motor mechanism, and therefore, of course, including spelling, the problem of determining the nature of the control or controls is much more difficult. In adult writing the factors involved are: (1) the meaning to be expressed; (2) the motor imagery representing the spoken words, and often the spelling of the words phonetically or literally; (3) auditory imagery of the words as heard; (4) visual imagery of the words as seen; and (5) grapho-motor imagery, including tactual imagery, of the words as written. Of these the fundamental factors appear to be (1), (2), and (5), that is, the meaning, the articulation-motor imagery, and the grapho-motor imagery. We may illustrate by the simple diagram on this page.

There is considerable doubt as to the place which the visual image occupies. That it acts as a kind of control can hardly be denied. The extent to which our vocabulary depends upon our reading, and the manner in which most of us have learned to spell, cause us to employ the visual image as a final court of appeal, when we are doubtful about the spelling of any word. But it is certain that normally, and when the word is sufficiently at our command to avoid this spelling difficulty, the visual image only comes upon the scene after a word is written to verify what we have written, as it were. And it is equally certain that under ordinary reading conditions the visual image is a very unreliable control, and that when we are reduced to dependence upon it alone, we are likely to be almost as often wrong as right. This is a point which I propose to investigate under experimental conditions when I have the opportunity, and any of you who may be sufficiently interested can perform a very simple experiment, which may throw some light upon the matter. (Experiment of allowing children to revise dictation, and change the words that look wrong). I shall be very much interested in any results you may get.



Relative thickness of lines indicates relative importance of connection.
A—Auditory Centre.
I—Idea Centre or Centres (Meaning).
V—Visual Centre.
AM—Articulation-Motor Centre.
GM—Grapho-Motor Centre.

Apart from our introspective study of our own writing, almost everything goes to prove the comparatively minor significance of the visual image in adult writing and spelling. We do not read by letters, but, at least to a considerable extent, by word wholes, and our visual image of any word must consequently be but a poor guide to the spelling of the word, unless so far as the determining or dominant letters are concerned. This is confirmed by tachistoscopic experiments where misspelt words are exposed. (Illustrative experiment: Exposure of a sentence in successive phrases in which more than half the words are misspelt). Further confirmation is got from the kind of error which

occurs most frequently in the writing of the educated adult. These errors may be arranged under three categories:—

1. The "hte" category.
2. The "their" category.
3. The "guage" category.

Errors of the first and third categories would not occur if the visual image were operative, and errors of the second category are not dependent upon the visual image at all.

These conclusions might be confirmed by an appeal to Abnormal Psychology, but, owing to the doubt which has been cast on arguments drawn from the study of aphasia and allied conditions by the recent work of Marie, I am loath to use evidence of this kind, and shall content myself with referring you to the Eleventh Lecture in Störring's *Mental Pathology and Normal Psychology*.

A very interesting sidelight, however, is thrown on the relation of writing to speech, and the fundamental character of the motor element, by the recent investigation of the connection between stammering and left-handedness, by F. B. Ballard, reported in the *Journal of Experimental Pedagogy*, Vol. I., p. 298. Ballard finds that among school children generally 2 per cent. are stammerers, that pure left-handedness does not affect speech in any way, that among left-handed children who have been compelled to use the right hand for writing, 17 per cent. are stammerers, and if we include those who have only suffered temporarily, 25 per cent.; that comparing normal children, including pure left-handed children, with dextero-sinistrals, we have one stammerer in every 50, as against one stammerer in every 4; and finally, that speech is not affected when the left-handed child acquires kinds of dexterity other than writing with the right hand, but only where the left-handed child is compelled to write with the right hand or where ambidexterity is aimed at in writing.

What the physiological explanation of these facts may be, I know not, but their psychological meaning at least seems sufficiently clear. The preferred hand is naturally used to acquire the complex co-ordinations required in writing. If the other hand be employed, more effort and attention will be required and the co-ordinations themselves are bound to suffer. The natural preference for right or left hand, as the case may be, is emphasised by the language function of writing. But, just because writing is language, the complex co-ordinations on the oral speech side are closely associated and bound up with the manual co-ordinations. Consequently the impairment of the latter tends to spread to the former.

There is no reason to suppose that any impairment of oral speech would result in such cases, if graphic signs were directly associated with meaning, independently of oral speech. This is evidently not the connection then, the explanation being that oral speech is already established as language, and the development of graphic language necessarily involves association with this already established oral language. Nor would impairment of oral speech result, if the connection between graphic language and oral speech were through the visual image. The impairment is produced because, with the acquiring of graphic language, the fundamental connection is made by the establishing of what we might call a great articulation-manual-motor complex.

I am quite aware that, as regards spelling, a good deal of experimental evidence might be adduced against the view which I have taken. But the truth is that the evidence from spelling experiments is very conflicting, as anyone may see by examining Rusk's chapter on Writing and Orthography. Further, most of the experiments have been carried out in Germany, where the phonetic difficulties, so pronounced in the case of English, are inappreciable, and the spelling problem is consequently different. And finally, the greater part of the experimental work has been done with nonsense words, or at all events with words, such as Latin words, unintelligible to the children who were the subjects, and this fact seems to vitiate the results of all such work, so far as language is con-

cerned. By eliminating the important factor of meaning we undoubtedly give an undue advantage to the visual image of the word, but, under such conditions we can hardly be said to be investigating language.

The only factor which we have not yet considered is the auditory image, and, however important it may be in the case of a phonetic language, there can be little doubt that it is relatively unimportant in English, except as an accessory to the articulation-motor, or as a general cue which, as it were, introduces the grapho-motor. I do not believe that it is very important even in phonetic languages, except at the beginning of learning to write, or, in the case of the adult writer, where he is not the complete master of any particular word, where it is not in his graphic vocabulary.

With this analysis of adult writing before us, let us pass to the consideration of the process of learning to write. Our ordinary practice has always been to begin with what is simply the drawing of the individual letters, or the elements of the individual letters. One defect in our method has been pointed out very clearly by Madame Montessori. We have forgotten how complicated the mere process of handling the writing instrument is, and we demand of the child far too much when we expect him to hold the writing instrument properly, to manipulate it, and to make definite forms, or rather to learn to do all these things at one and the same time. Madame Montessori's solution of this difficulty seems an eminently practical one. There is one point, however, that might be noted. The process of writing with a pencil differs in some rather important respects from the process of writing with a pen. I hope to make this clear presently. Consequently the manipulation of a pencil is not by any means an adequate preparation for the manipulation of a pen. As far as the pen is concerned, preparatory exercises with the brush would serve the purpose better.

But though this is by no means unimportant, I do not think it is the most important point in connection with learning to write. We begin, I say, with drawing. I do not mean that the preparation for writing is by drawing, but that the earliest writing of the child *is* drawing, and that he continues drawing letters and words not merely until he can write them, but long after he can write with considerable ease. But writing is not drawing, and must not, cannot, be taught as drawing. Our view of writing as graphic language, and our analysis of adult writing, force us to the conclusion that the teaching of writing as drawing is a mistake. We do not learn to write by drawing, any more than we learn to speak by reading, or to spell by looking, but we learn to write by writing, to speak by speaking, to spell by spelling.

In the first place the function of writing as graphic language is to express a meaning. Hence the grapho-motor mechanism must be associated with a meaning, but since this meaning tends to express itself in oral speech, the grapho-motor mechanism is associated with the meaning through oral speech, and with the establishing, as we have seen, of an articulation-manual-motor complex.

In the second place, if writing is treated as drawing, a new and disturbing factor is introduced, by the association of the grapho-motor mechanism with a visual form, and this at every stage of the process of writing, in the writing of the individual letter or of the complete word. Obviously one result of this must be, in the case of the individual letter at all events, the sacrificing of the association between the manual motor complex and the meaning. And another result, whether we deal with letters or with words, must be the making of the visual image fundamental instead of the motor image. As soon as independent writing starts this inversion of the true order of things must break down, but drawing with its tendency to this will always remain a disturbing factor, impeding the development of writing itself and possibly of spelling.

In the third place there will be a lack of motivation for the writing. There is nothing in the form of the letter or the word

to interest the child and to make the child desire to draw it. Consequently indirect motives of all kinds must be appealed to, and in spite of these the average child finds the acquiring of writing a wearisome business.

If we make our approach to writing through drawing, then writing only begins where drawing ends. As a rule we continue our drawing far too long, and by so doing really impede the development of graphic language. The use we have made of the writing copy has in the past been very unwise. It has bulked far too largely in our writing practice, and as a matter of fact, when the preliminary co-ordinations have been established, the use of the writing copy has seldom been writing practice at all. I do not mean to imply that the writing copy has no place in the school, or that it is not serviceable in certain circumstances to practise with a good model before one the drawing of letters or combinations of letters, but simply that the proper place of the writing copy is not the place we have assigned to it.

Again, in this connection, Madame Montessori seems to indicate another sound principle of method, by placing her chief dependence for the acquiring of a writing knowledge of the letters, not on the visual image as in copybook work, but on the tactual and motor imagery established by following with the finger the shapes of the letters. By making the motor image fundamental from the beginning we approximate at once to the character of adult writing. That the visual and auditory factors are valuable auxiliaries no one would deny, but they ought to be used merely as auxiliaries from the very start.

It has frequently been suggested that the non-phonetic character of the English language renders the use of the Montessori methods of teaching writing and reading to a great extent impracticable, or at all events that we cannot expect to get the same results in English as she gets in Italian. Such a suggestion seems due to a greatly exaggerated estimate of the difficulties which English spelling presents, and to some extent also to a failure to appreciate the true inwardness of the Montessori methods. The phonetic or non-phonetic character of a language does not affect the essential principle of the Montessori methods. In non-phonetic English the auditory factor becomes of less significance, and the visual factor of more significance, but that is all. One curious result, however, might follow the application of the Montessori methods to English, and that is the rehabilitation of the old alphabetic method of approach to graphic language, that is, to reading and writing.

There is one other point. Whatever method we adopt of preparing for writing, when the child begins to write, he must write significant and meaningful material. We must employ the language motive or motives. In order to get the best work in both writing and spelling, and I should say reading too, were I dealing with reading, this is absolutely essential. [Etc.]

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

5. *The rewards of obedience.* If it were possible for us to remain always unmoved and calm, whether our children obeyed us or not, they would find it difficult to distinguish between right and wrong. We have to tell them that a certain thing is right and we must be pleased about it, so that they may know and be pleased too.

Of course, this is what we really do. But what stupid ways some parents find of giving rewards: "You have been an obedient child, here is a sweetmeat," is often said to big children of six to ten years old. Or again: "I'll buy you a pretty blue ribbon." And so these selfish children acquire the habit of obeying only for sweets or gewgaws. Shall we be able to give them something every time we require their obedience? "You are a better child than your brother," a father used frequently to say to his little girl in order to humiliate her brother. And so the boy became jealous and the girl conceited. These are both evil tendencies. So I must not,

under pretence of reward, excite greed, or vanity, or jealousy, or indeed any evil tendency.

How shall I manage then? I must not give a reward simply for a good memory, a quick intelligence or pleasing manners, as is often done; we deserve no special credit for our natural gifts, and if the child be praised for these, he will not make any effort to acquire other qualities in which he is deficient. But if the little undisciplined rascal makes a big effort to be good I will give him a kiss for it; I shall praise him for his lesson, even if he has not known it very perfectly, if it is the result of hard work. My child will appreciate both my insight and my justice because *I shall only reward merit, i.e., effort.*

Is it then the case that I must give a reward every time that any merit is shown? At that rate a child would be continually deserving of reward, however slightly well-behaved he was, and he would end by becoming exacting. Just as appetite comes by eating, so, by receiving too many rewards, a person acquires a feverish greed of honours. The child would begin to think himself created solely to receive rewards, and I should be the machine to dole them out incessantly. Or perhaps the opposite result would be produced. Everything in time may become boring or wearisome. What a dreadful thing it would be if I were to hear my child say, "All right, bother!" "But when rewards are infrequent, they resemble all other rare things, they become infinitely more valuable. In the intervals the pupil has time to long for more" (*Théry*).

Then, if rewards are to be rare, must they be specially valuable or beautiful? "Their value is not in themselves, it exists only in our pupils' minds. One child would not think a necklace sufficient reward for what she had done, another would be more than content with a ribbon." Since the same effect can be produced with a very small thing, I should only use the simplest means: the simpler the means the more readily are they at the disposal of everyone. The same principle holds good in determining the tone of voice used. Some mothers bestow their praises in noisy bursts of joy and loud caresses, often even before strangers. Such excitement and display is most unseemly. *Let the rewards be simple and let them be simply bestowed.*

They must not be excessive. They must produce the required effect; they must show that I am pleased and that the recipient is made happy by their bestowal. If they are insignificant and paltry they only lead to ridicule; if I give them without any marks of pleasure they will not produce any satisfaction; it would have been better to say nothing and to do nothing. Everything which appeals to the senses makes a strong impression on the child. It is not a matter of indifference to him, whether I am preoccupied or interested in what he is doing, "My countenance overcast or wreathed in smiles." If I really want to influence the child, my gestures, tone of voice, in short, my whole appearance must be in harmony. When the child goes away he must feel happy and take his happiness with him. *The child must be cheered by my reward and must feel my contentment at being able to give it.*

Finally, the reward must only be given for a good act; it must appeal to the good in the child and must produce good as a consequence. In other words, it must be offered for a moral action, it must be moral in principle and moral in results. What kinds of rewards best fulfil these conditions?

So long as the child is well-behaved it is enough to appear pleased; my satisfaction will make his happiness. I am not angry, he can be at peace, he is good. Such ought to be the ordinary state of affairs. I shall show more pleasure when the child has done more to deserve it. "When Louisa has given me a pleasant surprise, as, for instance, when she has learnt her lesson before the prescribed moment, and she dances about the room, clapping her hands if I do not show sufficient signs of pleasure, she says to me in a tone of reproach: 'Are you not pleased, mama?'" (*Mdme. Guizot*).

For a child a little older, after some good deed, voluntarily undertaken, a *smile* is enough. A smile is all-powerful; its message reaches the heart. The child rewarded by a smile of praise feels, as it were, warmed and comforted, he smiles to himself, happiness has penetrated to his innermost being. And this is pure, heartfelt happiness like that which results from the accomplishment of a duty, it is unmixed with pride or selfishness. He is happy because he has made his parents happy; he goes on his way, full of joy and ready to begin again. Why do we not realise better the magic of this charm which is ever at our disposition?

If the deed is more deserving, then I should add *a word of praise* with my smile, not the praise of flattery of qualities already possessed, the only result of which would be to arouse pride or vanity, but a few simple words of praise for the good done. I shall not say "What a clever child you are!" but "That's right." Thus I shall appeal to the sentiment of duty while, at the same time, appealing to filial love by my smile; these are the two best forces we can use.

Finally, for an act which has demanded a very great effort, and especially an effort against natural inclinations, I shall give *a kiss*. A kiss is worth more than a smile or a word of praise; it is all that and more; it is a mark of deep satisfaction at an act judged difficult and thereby the more meritorious. No words will be needed; my heart will speak to his, we shall understand one another, my child will know what it is to have done right, and this satisfaction, when honestly experienced, is the highest and truest reward.

To conclude, *happiness and praise are sufficient rewards,* praise to illuminate the understanding and happiness to strengthen the will. Everything else is false and harmful. Wherever happiness and praise cannot reach the end desired, other rewards will only aggravate the wrong by pandering to evil inclinations such as greed and vanity.

I have now stated the principles. In their application I shall find myself obliged to act according to a multiplicity of varying circumstances, such as age, sex, and temperaments of different children. Therefore I must acquire a knowledge of the disposition and capabilities of each of my children, and this can only be gained by patient and diligent observation. This knowledge, however, will scarce avail me if I do not make a point of reflecting upon the effect produced on any particular child, on any given occasion, by a particular reward. And, in conclusion,if I want to succeed in my mode of action, I must, first, be master of myself. My duty then is to watch, reflect and control myself.

Suggestions for Study and Practice.

The Teaching of English Grammar.—"In sum English Grammar is taught in order to ease the teaching of English composition; it does this best through that attention to function which is required by the analysis of sentences. 'Terms of art' should be sparingly employed, and never employed except to mark facts of a language of which a writer must take account. It is of consequence to retain such terms in English teaching as associate the vernacular with cognate languages taught in schools, provided the terms have an intelligible application to modern English. If terms are grounded upon convention only, then there is an advantage, and no real loss, on the whole, in adopting those conventions which are accepted with reference to other languages, rather than the conventions which are limited to the vernacular."—*Prof. J. W. Adamson,* "English Grammar," *The Journal of Education,* March, 1914.

The Bases of a Kindergarten Curriculum.—"The most fundamental problems in the planning of a kindergarten program, or course of study, may be stated as follows:—

"I. The selection of the impulses, instincts, and interests which are developing at this period of the child's growth, and which make for the highest good of the child and society when provided with educative stimuli or material.

"II. The selection of the best subject-matter or materials for the creative impulses of the child to act upon in the self-active process through which he comes to appreciate and re-create the achievements of civilisation.

"III. The organization, correlation, or arrangement of the subject-matter or materials in a unity such as makes for the economy and simplification of the whole. This unity must be secured without sacrificing the individual nature or achievement of any one of the impulses entering into the organization."—*Patty Smith Hill,* in *The Kindergarten Theory and Practice.*

Sex Education.—Prof. Thomas M. Balliet, of New York University, outlines several points of attack in sex education. He believes sex instruction can now be given to the following groups: (1) To parents, by means of lectures; (2) to enlisted men in the Army and Navy, where the need for it is urgent; (3) to college students, both men and women; (4) to young people in Y.M.C.A.'s and similar associations. Dr. Balliet considers sex instruction to college students particularly valuable because it will enable them to impart sex knowledge in turn to pupils in elementary and secondary schools, as soon as the public is prepared for this step."—*The Training School Bulletin,* Feb., 1914 (*From Education Notes of the U.S. Department of Education).*

Handwork in Education.—"The subjects through which the senses can best be trained are also those in which mental application, or control by the will over mental processes, can best be practised. Furthermore, through the same subjects which best afford training for the senses, the information most needed by the child and the adult of to-day may best be acquired. What are these subjects? First, the sciences, such as chemistry, physics, and biology; secondly the household arts; thirdly, the use of common tools in the simple trades; fourthly, drawing; and fifthly, music."—*Charles W. Eliot,* "Present Problems of Education," *Educational Review* (U.S.A.), March, 1914.

Is there a General Memory?—"The above results afford additional evidence against the existence of a general memory faculty; thus memory for digits is uncorrelated with memory for a narrative or for concrete terms; one would expect to find a definite correlation in every case if the faculty theory is true."—*Stanley Wyatt, M.Sc.,* "The Inter-relation of Memory Performances," *The Journal of Experimental Pedagogy,* March, 1914.

Froebel and Montessori.—"To sum up the most striking differences between the Froebelian and the Montessori methods we may say:—

"The first grew out of the study of life as an ideal whole. The second grew out of a study of backward children.

"The first rests on concepts. The second rests on a base of sense impressions.

"The first reaches toward ultimate ideals of thought and feeling through symbolic types. The second offers a systematic series of exercises as preparation for the more immediate future.

"The first keeps its exercises related to reality through plays, as in the occupations. The second draws its materials from life; but teaches them as abstractions, as in buttoning and lacing.

"The first provides amply for the future years, but lacks exact discipline for to-morrow. The second prepares for to-morrow, but lacks a vision of the future years."—*Earl Barnes,* "Comparison of Froebelian and Montessori Methods and Principles," *The Training School Bulletin* (U.S.A.), Feb., 1914.

Experiment in Pedagogy.—"Teaching method in the school is primarily a readjustment of forms of knowledge and experience so as more effectively to stimulate and improve the immature responses of children. The growing importance of method in educational theory marks a growth in the teacher's consciousness of psychological factors precisely as the appearance of the newer aim in teaching has marked an increased regard for social factors"...The child-study movement "focussed attention upon the child as the crucial factor in education, the prime con-

ditioning force in all methods of instruction...Now a body of general psychological knowledge, rich in its criticism of old methods and in its suggestion of new means of procedure, gives a scientific basis to teaching method. Already where special psychological knowledge is needed, the educational psychologists seek it through investigation. And where the counter claims of competing methods defy ordinary psychological analysis and investigation the comparative student of teaching methods begins his experimental teaching under controlled but natural conditions."—*Dr. Suzzalo*, in *Newer Methods in Arithmetic Teaching.*

The Ancestry of the Montessori Methods.—"Any effective criticism of Montessori and her methods must in the long run direct itself to her fundamental ideas. For this reason, there is much to be gained by making the first approach to her system indirectly through a study of its ancestry in the world of ideas. She herself constantly invites her readers to take this way of comprehending her educational views by her generously persistent acknowledgment of her obligations to Itard and Seguin, the two great doctors who anticipated her in the yoking together of medicine and pedagogy. If, however, we are to appreciate fully the significance of this obligation of hers, we must go further back in the history of education than she has gone. Itard and Seguin were not really pioneers in a new conception of educational endeavour, as she seems to imagine. They were simply developing in a special direction the great revolutionary ideas about education which were first suggested by John Locke towards the end of the seventeenth century, and afterwards enunciated most clearly and convincingly by Jean Jacques Rousseau. She herself in following their lead was therefore recreating for our age some of the master thoughts of the recent past as she understood them herself, and so helping to carry forward a stage further the modern reconstruction of education."—*Dr. William Boyd*, in his book *From Locke to Montessori.*

The Child-Study Society and the Constituent Societies.

Preliminary Programme of the Conference to be held in Edinburgh, June 4th, 5th, 6th, 1914 :—

June 4th, Thursday afternoon.—Civic reception in the City Chambers. Inaugural address by the President, Sir James Crichton Browne.

Thursday evening.—Dr. Macpherson. Subject : "A Plea for the Recognition of the Instincts in Education."

June 5th, Friday morning.—

9 a.m.—Council meeting.

11 a.m.—Mr. Drever. Subject : "Experiment in Relation to School Subjects and Methods."

Friday afternoon, 4 p.m.—Garden party or other entertainment.

Friday evening.—Miss Johnston. Subject : "Survey of the Recent Investigations and Criticisms on the Binet Simon Tests."

Visits to special schools and Free Kindergartens on Friday, from 9 a.m. to 3 p.m.

Visits to Mr. Drever's Pedagogical Laboratory Friday, from 9 a.m. to 1 p.m., and from 2 to 4 p.m.

Also on Saturday, from 10 a.m. to 12.

June 6th, Saturday morning.—Mr. Cyril Burt Subject : "Mental Tests."

The Conference will be held at the Edinburgh Provincial Training College (new building), Moray House, Canongate. The Pedagogical Laboratory is in this College.

Among the special schools to be visited are "The Skin School" in Lanister Place, and "The Mentally Deficient Children's School" in Duncan Street.

Hospitality is offered to visitors from a distance.

The Tunbridge Wells Society.—At a meeting of the Tunbridge Wells branch, held February 2nd, the question of "The Place of Punishment in Education" was debated. A paper was read by the Rev. R. A. Bull, Principal of St. Andrew's School, Southborough.

Quoting Locke : "Great severity of punishment does but very little good, nay, great harm in education, and I believe it will be found that those children who have been most chastized seldom make the best men," the lecturer subscribed to this dictum, but would not range himself with the sentimentalists who would make life and its tasks easy, soft, and pleasant.

The great need in these days is grit earnest dogged determination, fearless courage, and sanctified common-sense. Punishment has a place in the education of such characters and is an essential ingredient. It is not the duty of the educator to bring such a constraining, watchful influence to bear on the child that he never merits punishment. As Herbert Spencer says : "The consequences of conduct must be experienced, so that the burnt child dreads the fire."

Punishment should be inflicted calmly, yet with

moral earnestness; should be brief, must not be allowed to dishearten, but should stimulate, and tend to produce a self-governing being.—*Mrs. J. C. Pontifex.*

Notices and News.

The Business side of the Journal is now definitely in the hands of Mr. H. R. Crisp, 45, Corringham Road, Golders Green, London, N. All inquiries about copies of the Journal, advertisements, subscriptions, etc., should be addressed to him and *not* to the Editor.

Reviews.

The Kindergarten Theory and Practice. Pp. xvi., 301. Geo. G. Harrap and Co. Price, 3s. 6d. net.

This book consists of "reports of the Committee of nineteen on the theory and practice of the Kindergarten," and is "authorized by the International Kindergarten Union." There are three reports, *viz., The Conception of the Gliedganzes,* by Susan E. Blow (pp. 3 to 230); *The Principles underlying the selection and organization of the Subject-matter of the Kindergarten Program,* by Patty Smith Hill (pp. 233 to 294); and *Type of Program preferred,* by Elizabeth Harrison (pp. 297 to 301).

The book appears to be, in effect, an official support, by the International Kindergarten Union, of Miss Blow's interpretation of Froebel's writings and work.

From Locke to Montessori. By William Boyd, M.A., B.Sc., D.Phil. Pp. 272. George G. Harrap. Price, 2s. 6d. net.

This is a most valuable and interesting book, written with that ability, knowledge, and grasp which characterises Dr. Boyd's work. Its title is, we think, an unfortunate one. It might do for any little scrap-book on the history of some of the great educationists; but this is a book on the history of the development of the theory and practice of "Education through the Senses." All who wish to get close to the foundations of the general movement towards a fuller development of Sense Education, which is much greater than the Montessori movement, should read this book.

What Children Study and Why. By Charles B. Gilbert. Pp. vi., 331. George G. Harrap and Co. Price, 3/6 net.

The author says: "I have endeavoured to give in plain, untechnical terms a few of the practical psychological and sociological reasons for teaching the subjects found in most of our elementary school curricula [U.S.A.], and to state what should result, from their study, to the benefit of the children and of society."

There is very little more in the book than what used to be called School Management, so far as class teaching is concerned, except that it covers rather more ground, is more up-to-date, and is rather more stimulating in matter and style.

Plant and Animal Children: How they Grow. By Ellen Torelle, M.A. Pp. iv., 230. D. C. Heath and Co. Price, 2s. 6d. net.

"It aims to make clear the ideas of evolution, heredity, variation, effect of environment, and the evolution of sex, without once mentioning these names...Morals have their foundation in life phenomena and can be taught adequately only with reference to these phenomena. A survey of the whole range of plant and animal life teaches the child inductively that all life, and therefore also human life, is governed by fixed laws, and that ignorance or transgression of these brings its certain penalty."

In very simple and lucid language the writer admirably fulfils her aim, and the book should prove extremely helpful to teachers, parents, and children.

An Imaginative Child. By Agnes Aubrey Hilton. Pp. 144. H. R. Allenson, Ltd. Price, 1s. 6d. net.

The sub-title is "Studies in a Child's Viewpoint," and the book is dedicated "To all who, working among children, realize the importance of trying to see child life, through a child's eyes." It is cast in the form of a domestic story centred around the nursery and schoolroom, and having a religious motif. We cannot recommend it from the child-study point of view.

Revue de Pédotechnie. Six times per annum. No. 1, November, 1913. H. Lamertin, Rue Coudenberg 58, Brussels. Pp. 64. Price, 7 fr. 50 per annum.

This is the first number of what promises to be a child-study magazine of the highest rank. Pédotechnie is defined as "a science of application which follows paidology step by step and, guided by it, seeks the practical means of aiding the normal evolution of the human being." The term is comparatively new, its nearest equivalent being pedagogy, which however was definitely rejected by the "Belgian Society of Pédotechnie" (founded in 1906) as having become restricted in meaning. The review, published by the Belgian Society in collaboration with the Institute J. J. Rousseau of Geneva, takes as its field the whole care of the child, pre-natal, through infancy and school and home life, in all its manifestations. The names of Dr. Decroly (the Editor) and Dr. Claparéde among its contributors are a guarantee of good work. Among the topics treated in this number are:—the value of school sports; the Binet-Simon Tests; the child and the cinema; and the education of the senses.

Publications Received.—*Journal of Education; Educational Times; Parents' Review; L'Intermédiare des Educateurs; Kindergarten* (Berlin); *Eugénique* (Paris); *Der Säemann* (Berlin); *The Journal of Experimental Pedagogy; Le Jardin d'Enfants* (Paris).

Child-Study.

The Journal of the Child-Study Society.

Vol. VII.—No. 4. MAY, 1914.

Binet's Mental Tests; What they are, and what we can do with them. V.

By W. H. Winch, M.A.

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Binet's First Test for Six-year-old Children deals with a knowledge of "Right and Left." The experimenter is instructed to say to the child "Show your right hand," and then "Show your left ear." Sometimes, Binet says, the children show both hands, or point out one hand with the other so indefinitely that one cannot tell with which hand the child is pointing and which hand the child is pointing at. The answers may be graded into three classes:

1. In which the children do not know right from left: these children usually show the right hand and the right ear.

2. In which the children have some notion of right and left, but are not quite sure: they usually show the right hand and touch the right ear, but afterwards correct themselves, and point to or touch the left ear.

3. In which the children answer at once, quite unhesitatingly and correctly.

The child is considered to have "passed" the test if he shows his right hand and left ear at once (it is well also to ask for left hand and right ear afterwards); or if, being wrong, he corrects himself without being told. At four years of age Binet says that no French children point to the left ear; all of them point to the right. At five years of age half are wrong; but at six years of age no child, not defective, makes a mistake.

Our English results do not quite agree with Binet's. Our young children are better, but our elder children are not quite so good; and this is true in all three of the English schools in which the work was done. The figures for the intermediate school were: thirty-six per cent. of passes at three years of age; forty per cent. at four; seventy-two per cent. at five; ninety-two per cent. at six; and even at seven years in the school most favourably situated one or two children could not pass the test. Let me analyse the results in more detail.

At three years of age many of our children held out the right hand and, instead of pointing to the left ear, turned the head, with the left ear towards the experimenter. Those who pointed did so with the right hand.

At four years of age no child turned the ear as the three-year-old children had done. Those who failed often showed the right hand, which was correct, then the left hand instead of the left ear; and even when asked a second time adhered to this action. Some reversed the correct answer; they showed the left hand and the right ear. Others again showed the right hand and the right ear.

At five years of age one girl used the left hand to point to her right hand, but when asked to hold up her right hand did so. Only one child showed the right hand and right ear. All the other five-year-old children who could not do the test correctly showed the left hand and pointed to the right ear. They knew right and left in their application to opposite sides of their bodies, but they did not know which was which. This, of course, is a stage through which children often pass in their application of names, unless good direct pedagogical method prevents it. The common experiences of life and the more or less confused and misunderstood instruction which results from the compan-

ionship of older children doubtless help to produce it. In colour-naming, for example, it is a common feature. Children know that the word blue is a colour-name before they can accurately apply it to what we call blue.

At six years of age eighty-three per cent. of those who worked the test correctly held up the right hand and pointed to the left ear with the left hand; and seventeen per cent. held up the right hand and pointed to the left ear with the right hand also. One boy who was incorrect showed the left hand and the left ear. One girl, after being marked as unsatisfactory, was given four other trials, with the following results: at the first trial she showed the left hand and right ear; at the second trial she showed the right hand and left ear; at the third trial she showed the left hand and right ear; at the fourth trial she showed the left hand and left ear. In the second case she is right by chance, and might have been passed in error had she done this at first. Hence the need for repeating and varying the test.

At seven years of age every child in this school worked the exercise correctly, and each child held up the right hand, and pointed to the left ear with the left hand. This is, obviously, the most mentally developed method of response.

My results agree with those of Binet to the extent that in both cases, for English as well as for French children, the exercise falls naturally into the six-year-old group of tests.

Binet's Second Test for Six-year-old Children is a test of Memory. The method of carrying out this test is identical with that of his second test for three-year-old children; but now a sentence of sixteen syllables is to be repeated. Any error of any kind invalidates the answer on Binet's standard of passing. He tells us that half the French children of five can do it, and *all* the French children at six. A similar, though much easier, linguistic test for his three-year-old children was found too difficult for our children, and was seen to be suitable for English children of four. Let us see if a similar relationship between French and English children is found in the results of this test.

At once I may say that English children appear to be less proficient. Of course, the length of the sentences is not the only factor to be considered, the meaning is a factor too. But ours were no harder than Binet's in meaning. His example of a sixteen syllable is *Nous irons à la promenade. Donnez-moi ce joli chapeau.* Our sentences were:

1st. Come with me to see the toy-shop, and I will buy you a nice toy.

2nd. We will go for a walk if you will give me that pretty straw hat.

3rd. When we go to school we like to have a nice game in the play-ground.

It became obvious at an early stage in this research that if we adhered to Binet's standard we should have scarcely any passes at all. And in working with *twelve-year-old children* in a higher grade school and using sentences of twenty-six syllables, as directed by Binet for twelve-year-old children, I found no single case in which, on Binet's "pass" standard, the boys were successful. It is probable that, linguistically, there is a balance all round in favour of the French. Most likely it is a racial difference, for the difference is too great to be merely a product of pedagogical method. However that may be, I had necessarily to modify the "pass" standard: English children were considered to have satisfied the test if *two* or more of the three sentences were repeated correctly. Even then, though at five years our children were as good as the French, at six they were much inferior; we had less than fifty per cent. of passes, and even at seven only some sixty per cent. But I ought to say that in the school most favourably situated the results for six and seven-year-old children were much higher. I will analyse in more detail the work of the intermediate school.

At three years of age twelve per cent. of the children passed. Some said nothing; some gave up trying after saying a few syllables; and some gave part of the meaning of the sentences without rendering the exact words.

At four years of age the number of "passes" did not increase much; but there was considerable improvement, nevertheless; for the majority, even though they failed, repeated a portion of the sentences quite correctly, and then gave a free rendering of the remainder. All of them gave something of the meaning in their answers.

At five years of age somewhat less than half were successful. But all the rest attempted the sentences and got to the end somehow. A few children omitted the qualifying words; for example, instead of saying "Give me that pretty straw hat," they would say, "Give me that hat." "Substance memory" still played an important rôle in their answers.

At six years of age (the age for which Binet considers the test suitable) there was (except in the well situated school) no very considerable improvement. But often the qualifying words were the only omissions. All the children, with one exception, made a fair attempt, and gave part of the sentences exactly and part in substance.

At seven years of age about sixty per cent. could repeat the sentences verbatim. As at the previous age, the answers of those who failed were partly exact and partly in substance, and the qualifying words were often omitted or changed. Thus, instead of "That pretty straw hat," the children would say "That nice straw hat." The case of the pronouns and the tense of the verb were sometimes altered; instead of "We will go for a walk," the child would say "Let us go for a walk."

This kind of test proved very difficult for all our young English children, and indeed for English children of other ages too. I have, therefore, placed the test in the eight-year old groups for our country, for only at that age does it seem certain that normal children can succeed. For schools in "good" neighbourhoods it could be used as a seven-year-old "pass" test.

Binet's Third Test for Six-year-old Children deals with their æsthetic judgments. Binet tells us that the young child has a sense of beauty, and that there is no adult faculty which does not exist in some degree in the young child. Such propositions raise a number of interesting theoretical questions: I must not be understood as accepting them because I gladly accept Binet's Tests. He used six drawings of women's heads: three pretty, three very ugly. He presented two at a time, one pretty and the other ugly, and asked the child which was the prettier. He placed the pretty face sometimes to the right and sometimes to the left to discount the automatic repetitive tendency of children, which leads them to keep on pointing to the same side. The drawings used (modified somewhat) are given on my *Form for Testing Backward Children,* published by Ralph Holland, Temple Chambers. For a child to "pass" he was required to give three correct answers. Binet adds that at five years of age French children do this test badly; half only give correct answers; but at six years of age they all discriminate quite clearly between the ugly and pretty faces in each pair.

At three years of age our English children scored only twelve per cent. of passes. Some of them regarded the test as a problem in identification. One child, at least, made no atttempt at discrimination, but pointing to one of the ugly faces, said "That's a man."

At four years of age the number who could make the correct æsthetic judgments advanced to sixty-eight per cent.

At five years of age ninety-two per cent. gave satisfactory answers; the remainder pointed indiscriminately, and when, as a further test, the pictures were rearranged and the children were asked to point to the "ugly" ones they still pointed indiscriminately. In the very poor school one boy of five years persisted that one of the ugly ones was pretty because her hair was "tied up," the other was "hair all down." Another boy of five in the same school said, pointing to one of the ugly ones, "The lady with a collar on is a man, so he's the best." Thus early does the male sex believe in its own dominance.

At six years of age (the age for which

Binet regards the test as suitable) one hundred per cent. of the children in our intermediate school gave correct discriminations. One boy hesitated somewhat when shown the first pair of faces, and said, "Neither of them is pretty." He immediately corrected himself, however, and pointed to one of them. One may, perhaps, be permitted to agree with the boy's first answer, as we were using Binet's drawings and not the amended ones given on my "form."

At seven years of age one hundred per cent. again were correct, and there was no hesitation on the part of any of the children.

When the children in the "very poor" school were questioned about the drawings afterwards, the request being "Tell me about the pictures," none of the children were ready to suggest by themselves the words "pretty" and "ugly." Their words were invariably "best," "nice," "funny" and "nasty." One boy aged seven said, "That's a cook," pointing to an ugly one, and "That's a lady," pointing to the pretty one. Children can understand terms and apply them correctly when questioned before they can use them correctly. This should be remembered by those extremists who claim that education should be entirely a spontaneous process. On the other hand, it has been suggested to me by a first-rate teacher that many ugly people are much liked by children; and that they are using the æsthetic expressions without really making æsthetic judgments. Pleasant and unpleasant is what they really mean, not "pretty" and "ugly." This problem could be tested by using "plain" faces with sweet expressions, and comparing them with "pretty" ones. However this may be, in all the schools tested it was quite obvious that our English children were ahead of the French in this test; it was placed, in consequence, among the five-year-old tests, and not in the six-year-old group as Binet places it.

In the three schools, commencing with the "poorest," our figures were eighty-five per cent., ninety-two per cent., and ninety-five per cent. of "passes" at five years of age.

Binet's Fourth Test for Six-year-old Children is concerned with definition. Owing to the stupid verbalism of a discredited system of teaching in which definitions were taught and learnt by rote, without even the presentation of the things defined, all definition has tended to fall into discredit, at least, theoretically; for, practically, the teaching of definitions proceeds very much now as it used to do; but the wholesale condemnation of definition is a serious error, as, I think, the course of this research will make quite clear. Properly understood, a definition is a summary, an analysis and the exhibition of a mental attitude towards what we know, doubtless, imperfectly. We cannot wait till we know everything before we define, and if we could it might not help us much. For our thought falls into or is guided by systems and by definitions of the same thing, all different according to these systems and our purposes in making them. Definition is selective, like all our mental activities.

All of us then should be trained in definition. Every educated adult knows how unprofitable discussion is unless one participant in it tries to see what the other really means by the terms he uses. If the disputants cannot (as is mostly the case with the expert and the layman), discussion is disappointing to both parties, nay more, it is vastly irritating. How shall we be trained? Well, first of all, by defining the things we know well. We ourselves do not, any more than the children, always proceed by *genus et differentiam*; but let the answers speak for themselves, and show us the methods of natural definition among young school-children.

Binet points out to us that this test, though a good linguistic one, is not merely a linguistic test, for it indicates to us the point of view from which the child regards the thing defined. The experimenter is to ask the child such questions as "What is a fork?" "What is a horse?" "What is a table?" "What is a mother?" Some children will remain silent or say "It's a

fork," or merely point to one, or say "That's it," or "That's a fork." Or they may define by its use (Binet does not distinguish between "use" to us and "function"—two very different forms of definition) as, for example, "A horse is for drawing carriages"-"A horse is to run"-"A fork you eat with it"-"A chair is used for sitting on"-"A mother is for taking care of little children," and so on. Or finally, they may give a definition superior to one of use, containing, perhaps, an element of classification or description, as, for example, "A mother is a lady"-"A horse has four legs"-"A horse it runs, it eats."

Binet is mistaken in supposing that a functional definition of a horse is superior to one of usage; the reverse is the case. Children define a horse by its own functions before they know that it is for us his activities are employed.

Five definitions are asked for from each child, and it is considered to have passed if it gives three definitions of the types either of Class 2 or Class 3, the identification of an example or the repetition of the same word, being included within Class 1.

The following summarises Binet's results with French children. At four years of age half the children define by a single use, at five the number increases a little, while at six years we can say that all children give definitions, but they are not always definitions of use. It is only at nine years of age that the definitions superior to those of use become the majority.

English children most certainly give good definitions of the latter kind before the age of nine; but for the present we are testing young children only. Accepting definitions of either "use" or "function" as satisfactory, we find that *at three years* no child can give "good" definitions, which is in agreement with Binet's work.

At four years of age forty-eight per cent. passed; again in precise agreement with Binet's results.

At five years of age there was a great improvement; the percentage of passes in the three schools averaged about seventy per cent.

At six and seven years only a few very backward children failed. On the whole the English results are very like those of Binet, except that our five-year-old work is much better than his. Still, as the figures for the five-year-old children of the three schools are not in such close agreement as I should like, I have thought it safer to adhere to Binet's classification of the test, retaining it in the six-year-old group of tests, and not placing it earlier, as I thought of doing at first; though further English researches may show that it is really a five-year-old test for our children. I now analyse the English results in more detail.

At three years of age every child who answered did so by means of a simple repetition: "A fork"-"A mother"-"A chair"; or by pointing.

At four years of age nearly fifty per cent. gave satisfactory answers. Examples follow:—"A mother is to mind you"-"A mother is to get your tea"-"A mother gives you your food"-"A mother is to cuddle you."

The mother's existence is considered only in relation to children up to quite a late age in school life. The reference to the family is almost as strongly marked in the definition of father: "A father's to cut your meat"-"A father is to get money"-"A father is to go to work." Most of the fathers in this district do go to work and get money; though this would not be true in all London districts. One might be tempted to suppose that these purposeful and egocentric definitions were limited to those of difficult things like mothers and fathers, which are quite naturally, in their full relationships, outside the range of the young child's knowledge. But this is not so. For example, the four-year-old children tell us that "A fork's what you eat your dinner with"-"A table's what you have your tea on"-"A chair's what you sit on" (a very common answer), and "A glass is to drink bitter out of."

In the definitions of animals the *func-*

tional reference is marked, the *use* of the animal to us becomes fully dominant later on. "A horse runs along" is given, corresponding with Binet's "A horse, it runs, it eats"; then "A horse is to draw carts," an intermediate stage which, in later years, becomes "A horse draws our carts" and "A horse pulls our carts for us and carries us along," for the use to us of some things is only realised later. This is strikingly shown when definitions of words such as "Soldier" are asked for. The point I raise is that definition by use or purpose may not in all cases be the earliest form of definition, a consideration which it appears to me that Binet has overlooked.

At five years of age English children show a very considerable advance. Those who did not "pass" simply repeated the word or pointed as the three-year-old children had done. There was a sprinkling of answers here and there which went beyond the stage of use and function; for we received definitions by material, by description, by adjectival qualification, and by synonym. For example: "A table is wood"-"A chair is wood"-"A table's got four legs"-"A chair's got a seat"-"A father is big"-"A father's a dada." The remaining definitions were of use or purpose, with an occasional noun of classification. Examples are: "A table is to lean on"-"A table is to put your cups and saucers on"-"A chair is to sit on when you eat your dinner"-"A fork is to eat your dinner with"-"A fork is to eat your greens with"-"A fork is to dig into your meat" (given by twenty per cent. of the children)-"A horse is what goes in a cart"-"A horse is an animal what gives you a ride on its back"-"A horse is to pull 'buses along"-"A mother is to mind you"-"A mother is what cooks your dinner"-"A mother is what makes your tea"-"A mother is what you live with"-"A mother is to scrub the room out." With young children the mother is conceived solely in reference to her family utilities; the *practice* is not very different later, but the theoretical conception of her changes. The definitions of "father" are equally illuminating: "A father is a workman to get the money"-"What gives mother the money"-"A father is to get up and light the fire." All these are good fathers; more dubious are the following: "A father he comes home to have his tea and then goes out again"-"A father is to come home and go to sleep"-"A father is to smoke pipes." In the "very poor" school many children up to and including those of five years traced the object in the air; but, of course, there were difficulties by this method with such a term as "mother." One four-year-old boy traced his objects, but when he came to "mother," stood still with his finger in the air, and said, "Eats her dinner with a knife"; he was not allowed a knife and could not use it.

At six years of age less than ten per cent. failed. The following answers are typical:—*A Fork:* "What you eat with"-"What you pick up your meat with"-"A thing what you hold the meat still with"-"A thing what keeps things still when you cut"-"A thing what you dig into your meat and then cut it." *A Table:* "What you put anything on"-"What you do twice one are two on" (the reference is to building up arithmetical tables concretely)-"A thing what you put paper on and write"-"A thing what you put cups and saucers and plates on"-"When you want to do your ironing you do it on the table"-"Very handy to put things on"-"Has eight legs and a piece flat at the top"-"A thing you have your food on." *A Chair:* "What you sit on" (given by over ninety per cent. of the six-year-old children)-"A thing what is made of wood and has four legs."

A Mother: "Your wife what is kind to you"-"A woman who gives you your tea, dinner, and that"-"What minds you and sends you to school, and gives you your supper and breakfast and dinner"-"A lady who gives you your food and dresses you, and makes you neat and clean"-"What looks after you and gives you food"-"What looks after people and babies"-"A lady what does things for you"-"Like a servant to look after you"-

"She has two legs, two arms, and two eyes." *A Father:* "A man who gives their mothers money"-"A man and he makes bread" (this child's father is a baker)-"A man who keeps you"-"Goes to work and brings money home for you"-"Who brings home money and gives it to your mother"-"What smokes pipes." *A Horse:* "An animal what draws the carts along"-"What draws the carts along and carries things"-"What pulls carts along and you ride on"-"An animal what runs along."

Many of these definitions represent a great advance. There is considerable classification, "what" and "thing" indicating its earlier stages. Then come references to a higher genus as "wife," "woman," "lady," "man," "animal." The differentia we have yet to seek in a logical sense; indeed, very few young elementary school children arrive at it at all. It is an interesting and important pedagogical process to assist children to define by genus and differentia: it can be done in such a way as to stimulate them to enthusiastic co-operation; but this is not the place to indicate the best method; one word only of caution, "Don't *tell* the children the definitions."

The social interest attaching to the definitions of "mother" and "father" is considerable. They are a series of valuable testimonials to the mothers and fathers, especially to the mothers. It is a little distressing to think of so many women wholly sacrificed to their children; but present social arrangements admit of nothing else for good mothers. The fathers are a good lot, too, except, perhaps, the gentleman whose most striking activity is to smoke pipes.

Here and there we find indications of description, a later and more developed stage than that of definition by use to us; it is, as it were, an ascent into an objectivity which is the metaphysic of the able child and the natural man. There is a return to subjectivity later, and, finally, a pragmatic union of objectivity and idealism; but I fear these observations are not interesting to the student of child-study who is not also a philosopher.

At seven years of age every child in all three schools gave satisfactory definitions. Whilst the "younger" form of definition still persisted in many cases, there were, in individual children, indications of great advance. The following are some of the definitions given: *A Fork:* "What you eat your dinner with" (a very common definition; thirty-two per cent. gave this answer)-"What you pick up your food with"-"What you pick up your dinner with"-"What you dig up your dinner with"-"A thing what you pick up your dinner with"-"What you hold your meat with"-"A thing you pick up your fish with"-"What you have your dinner with"-"What you pick up your potatoes with"-"A thing with three prongs and a black handle"-"A table thing, and we eat our dinner with it"-"It has a handle, and it goes round at the bottom, and it's got prongs that stick up, and you dig it into the meat"-"It's a thing with three prongs and two pieces of flat wood; and two lines down the sides"-"I knew, and I've forgotten. It's for eating with, isn't it? and it's got a handle and some long things at the end, hasn't it?"

A Chair: "What you sit on" (sixty-eight per cent. of the seven-year-old children gave exactly these words)-"A thing what we sit on"-"A thing what you sit on, and it's got four legs"-"A thing what you sit down to the table on"-"A thing what you lean against and sit on, and it has four legs"-"A chair has four legs and a seat and a back"-"We sit on it, and it's got a square seat, and it's got a back and four legs, and a rod that goes across it, and two rods at the sides, and one rod that goes in front underneath"-"A chair is a chair, isn't it? It's got four legs and a seat with holes in it" (the reference is to caned chairs). "Some have got straight pieces across, and some have got round pieces, and some have arms."

A Mother: "Gives us our food"-"She sweeps the room and does the fire-place"-"She gets you ready for school, and gives you your food"-"She looks after you"-"What sees after your dinner" (forty per

cent. of the seven-year-old children gave this answer)-" She minds the baby and gets the tea ready "-" She does the work "-" A mamma, who cuts the bread "-" What looks after the home "-" A lady who works "-" A woman who keeps you well "-" A lady who feeds the children "-" A lady who looks after you "-"To do the work "-" A lady, she's got a white blouse on and a black skirt, and she works "-" To give you your dinner "-"A lady who gives us things what we want, and buys us our dinner "-" A lady, she's got eyes, mouth, nose, fingers, and she works "-" A lady who cuts our bread and gives us our tea " -" One of our parents; they keep you."

A Father: " Who goes to work "-" He goes to work and earns money "-" He goes to work and earns money for us "-" He earns all the money " (seventy-six per cent. of the seven-year-old children gave the foregoing answers)-" A man who goes to work "-" A man who goes to work to get the money. And Dada goes to the market to buy the meat on Saturday "-"A man with whiskers, and he goes to work"-" A man who goes to work and earns money; he works at boilers" (this child's father works at boilers)-" A gentleman, he goes to work all the week, and stops at home on Sundays "-" A man who gets you your living." [*Etc.*]

The Psychology of Writing.

III.

By James Drever, M.A., B.Sc.

(*Lecture delivered before the Edinburgh Child-Study Society*).

3. *Experimental Investigation of Writing.* We now come to the third part of our subject, and it is necessary to deal with it as briefly as possible. I have more than once in the lecture indicated the kind of experimental work which has been done and which may be done in any school in connection with writing and spelling. I now wish to speak of the laboratory side of the investigation of writing, of the kind of work that has been done, and can in the main only be done, in the pedagogical laboratory.

There are three general lines of investigation bearing upon the psychology of writing; these we may consider briefly in turn:

1. Investigation of the general conditions or general factors involved in learning to write. For example, we may study habit formation, the effects of practice, the development of muscular control and co-ordination, the facility and rapidity of movements of different kinds, and like processes and phenomena. The chief investigations of this class bearing more or less directly upon writing have been:—

(a) Study of the development of muscular control and co-ordination. Two experiments deserve special notice. In the first place we may study the rate of tapping, either with a Morse or reaction key, or with tapping-board and style, as figured in Whipple's "Manual of Mental and Physical Tests," in both cases registering on a smoked surface. The style we employ in our laboratory in Edinburgh we owe to Meumann's laboratory in Hamburg, and it differs somewhat from that figured in Whipple. It is shaped precisely like a lead pencil, and may be made from any lead pencil by replacing the lead with a knitting needle, and attaching a light terminal to the top. Rate of tapping may be taken for various ages and under various conditions of freedom of movement at the various joints.

In the second place the development of muscular control may be studied by means of the "steadiness tester," also figured in Whipple. In this experiment a style is held by the subject in a small circular hole in a metal plate, without touching the edges of the hole. The holes vary in size from about 1 cm. to 2mm. in diameter. Every touch rings an electric bell and is recorded on a smoked surface.

(b) Rapidity, facility, and accuracy of movements approximating to those used in writing. This investigation requires a tracing board. Essentially a tracing board consists of a narrow slit between metallic sides and with a smooth surface,

as of glass, at the bottom. The task set the child or subject is to move a style of the same general description as that used with the tapping board from end to end of the slit without touching the metallic sides. Every touch rings an electric bell, as with the steadiness tester, and is recorded on a smoked surface. In our form of tracing board the slit is movable through an arc of 180 degrees, so that facility and precision of movement in any direction may be studied. This experiment has a very direct bearing on the best slope for writing.

2. Experimental analysis of the act of writing. The experiments just described might come under this head also. There are other experiments, however, which involve writing itself. The first that deserves mention is the very interesting experiment by means of an apparatus devised by Judd. This apparatus is designed to separate finger and hand movement in writing. It may be very easily made by a curved strip of steel or spring, carrying on a hinge a short pencil, which is attached to the fifth metacarpal bone of the writing hand. This traces out the hand movement in writing, and by comparison of the trace with the actual writing we can isolate the finger work. As a general rule the writing of the child shows little finger movement, the words written being read almost as easily in the trace made by the apparatus as in the writing itself. Adult pencil writing approximates to this type also, but in adult pen writing, at least careful pen writing, the apparatus traces little more than a slightly uneven line, all the finer movements being finger movements.

Another investigation of still greater importance coming under this head is the investigation of writing pressure. There are really two pressures to be studied, grip pressure and point pressure. As regards the first no work, so far as I know, has yet been published. We have, however, an apparatus which permits us to register grip pressure, and the most interesting result we have got so far is the rhythmical rise and fall of the grip pressure in adult writing. The grip pressure curves, as we should expect, considerably resemble the point pressure curves, though with less irregularity. Both pressures may be recorded on a smoked surface. The point pressure curve is obtained either by resting the writing surface on an air cushion pneumatically connected with a tambour and writing lever, or by writing on a plate mechanically connected with a writing lever, or by using our apparatus, which records the pressure on the writing point rather than the writing surface, by causing the top of pen or pencil to rest on a receiving tambour. (For description see "Journal of Experimental Pedagogy," vol. 2, p. 25). This pressure curve allows us to study not merely the degree and variation of the pressure, but the nature of the writing impulse, as well as the extent to which co-ordination is developed.

There are striking differences between the pressure curves for children and those for adults, and in the case of children three stages in learning to write can be readily distinguished by means of the pressure curves. At the first stage the curve is long drawn out and indefinite, with maxima and minima of pressure, showing little relation to what is written, so that sometimes each letter has its own maximum of pressure, sometimes even each stroke, sometimes a group of letters, and sometimes a whole word. At the second stage each word can be clearly distinguished, the words appearing as level plateaus, or as gradually rising slopes, occasionally broken where the writing has not been continuous, but otherwise presenting a characteristic smooth outline even in the valleys between the words. At the third stage the tops of the plateaus or rising slopes become very irregular, so that the curve again has a quite characteristic appearance. These irregularities pass into the more or less regular "ripples" of adult writing.

The significance of these changes is not very clear, but possibly the last represents the passing from drawing to actual writing. At first the child draws strokes, or letters, or groups of letters, or even words,

then he still largely draws whole words, and then, when the irregularities, which have been noted, begin to appear, he is passing to real writing, to graphic language, and this passage seems normally to occur at or about the age of eleven. When the "ripples" become more or less regular or rhythmical, co-ordination is acquired so far as to enable the individual to express himself in graphic language without thinking about the actual forms he is making.

Different types of adult writing have also been distinguished. In one type each word is written with a single maximum of pressure, in a second there are several maxima in each word; again one type shows heavier pressure with more rapid writing, another lighter pressure, and so on. In adult writing there are also marked differences between pen and pencil writing, which are not present to anything like the same extent in the writing of children. In both cases, however, considerably less pressure is shown with pen than with pencil, a difference which, as a rule, becomes more and more pronounced up to a certain point, as writing is acquired, and then again remains fairly constant or diminishes.

3. The third line of investigation is the study of writing itself. We may determine the rapidity of writing, measure its legibility, and seek to find how the two are related under different conditions. The method of study in this case is fairly obvious. Again, we may try to solve the problem of standardizing writing, that is to say, finding a method of measuring the quality of writing, which can be generally applied to all writing. This leads us on to controversial ground, which we have no desire in the meantime to traverse, so that I may be brief. Facility of production and legibility would seem to be the only characteristics of writing which can be measured in objective terms, and some people think these are enough for our purpose. A scale for judging the merit of writing has, however, been published by Thorndike, which claims to take the factors of neatness and beauty or pleasingness into account as well, and yet give what is to all intents and purposes an objective determination of quality. Another scale has been published by Ayres which is simpler and appears to be less dependent on subjective factors. But the whole question is still very open, and there is ample room for more work in this department as in the other departments of the experimental study of writing.

Conclusion: And now in conclusion I must apologise for the dogmatic way in which I have been compelled to present what is in many cases still only a matter of individual opinion after all. My statements have been far more dogmatic than I really feel. It must be granted that a great deal of work still remains to be done in connection with writing, some of it in ordinary schools, some of it in experimental schools, and some of it in the pedagogical laboratory, before we can claim to have got a valid solution to many of the problems. The only points with regard to which I am disposed to be dogmatic are, first, that we must never lose sight of the fact that writing is graphic language on its production side, and, second, that the motor factor is fundamental in writing as in oral speech. If these contentions are accepted I do not think we can escape the more important of the inferences which I have tried to draw.

Notes on the Illustration.—The illustration consists of copies of original grip and point pressure traces, first taken on tracing paper and then photographed.

I. *Point pressure traces from children of six; all written with pencil.*

(*a*) The words written are: "The cow gives us milk."

(*b*) The words are: "A man can." This was the first attempt at script on the part of this child. He had only printed before.

(*c*) The words are: "A man can run." They are printed, the child having not yet reached the stage of script. The curve is a characteristic "drawing" curve.

II. *Point pressure traces from child of eight.*

(*a*) The words are: "Moray House School," written twice, the first time

slowly and the second time quickly. Note the characteristic level top. Pencil writing.

(*b*) Words as before, but written with pen. The reproduction hardly does justice to the actual irregularity of the curve.

III. *Point pressure trace of pencil writing by a child of eleven.*

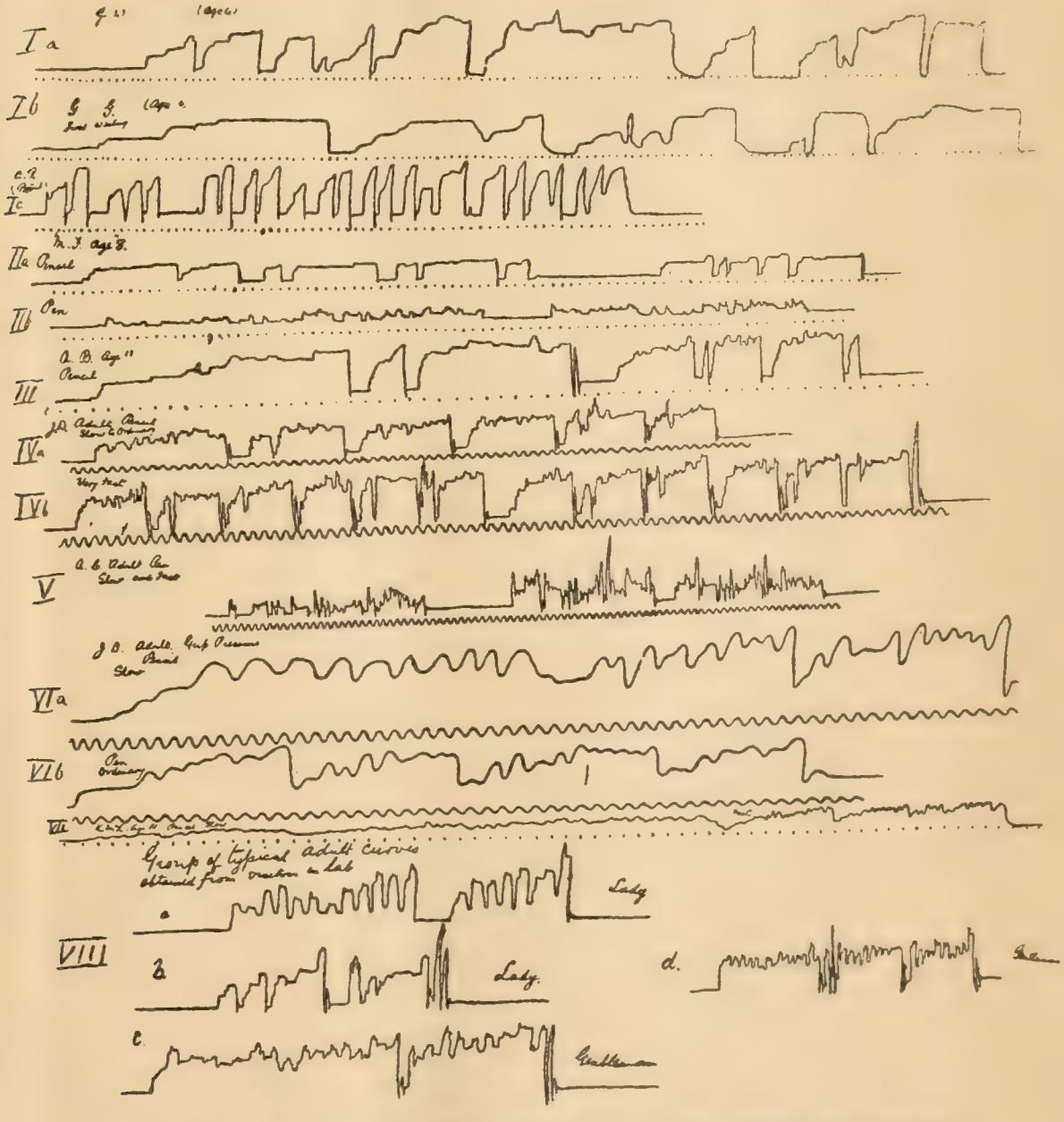
The words as in the last cases. Note the change in the top of the curve, approximating to adult pressure curves below.

In all these cases the time record is given by a Jacquet chronograph marking seconds. So also in VII.

IV. *Point pressure traces of adult pencil writing.*

(*a*) Ordinary slow and careful writing of the words "Moray House School" twice.

(*b*) Very rapid writing of the same words four times. Note the increased pressure with increased speed. The time record will show the comparative rates. It is given by a vibrating spring marking fifths of seconds.



THE PSYCHOLOGY OF WRITING : GRIP AND POINT PRESSURE TRACES.

V. *Point pressure traces of adult pen writing.* The subject hardly gives a normal curve, but one which rather exaggerates the variations of pressure and therefore somewhat magnifies the differences between pencil and pen writing. The words are as before, "Moray House

School," written first at ordinary rate, and then twice at a fairly rapid rate. Time record as before in fifths.

VI. *Grip pressure traces of adult writing.*

(*a*) The words "Moray House School" written at ordinary careful rate with pencil.

(*b*) The words "Moray House School, Moray," written at a slightly faster rate with pen. Time record in fifths.

VII. *Grip pressure traces of the pencil writing of a child of eleven.* The words "Moray House School" written twice, slow writing and fast writing. Time record in seconds.

VIII. *Typical adult point pressure traces; all of pencil writing.*

(*a*) The words "Moray House" written by a lady visitor to the laboratory.

(*b*) The same words written by another lady visitor.

(*c*) The same words written by a gentleman visitor.

(*d*) The words "Edinburgh Training College" written by a gentleman visitor.

Definitions in Early Childhood.

By William Boyd, M.A., B.Sc., D.Phil.

(*All rights reserved*).

A child brought up among educated people begins to show interest in the meaning of words at a very early age. I was surprised to find that among the few questions asked by my little girl towards the end of the second year, about one in five was concerned with meanings. As her experience has grown wider, the range of interests indicated by her questions has greatly increased, and the proportion of questions relating to words has diminished. But the desire for an explanation of new words has continued strong. An unfamiliar term is an evident challenge to her mind, to which she rarely fails to respond. Sometimes it provokes the direct question, "What does it mean?" At other times it appears to pass unheeded, but the first convenient opportunity is taken to make use of it in a context similar to that in which it was heard, and to find out its meaning then. Thus, at four years and nine months, she remarked to her mother, "My cat is looking at me with very intelligent eyes." Then, after a brief pause: "What does *intelligent* mean?" It is worthy of note, however, that questions about meanings seem to have reached their maximum about three and a half. I find from a record of some hundreds of questions at different ages that the percentage of questions of this kind (in the forms, "What is ——?" "What does —— mean?" "Why is it called ——?") show an increase up to three-and-a-half and a definite decrease thereafter: at three, 3 per cent.; at three-and-a-half, 5.1 per cent.; at four, 2.2 per cent.; at four-and-a-half, 1.6 per cent.

Examples of the more difficult inverse process of answering questions similar to those she asks other people have been less common. But the ability to explain her language has undoubtedly been present since her third year, as is evident from two cases of answers noted as occurring in the course of ordinary conversation in the thirty-sixth month. The first of these is one of the most remarkable I have noted at all. She was speaking one day about divers, concerning whom she had learned, both from a picture and from the song of "The Diver." Curious to know what kind of ideas she associated with the word, I asked what a diver was, and got the answer (which I wrote down as she spoke), "The diver was the man that took all the sponges out of the water" (a pause) "and dipped them in the sand to make them clean." The conversation which provided material for the statement, it should be added, took place two or three months before this time, and so far as I know, the subject was never mentioned by anyone thereafter. A week later, she happened to refer to the policeman. When asked what a policeman was, she replied: "A policeman is a man that brings wee girls home to their mother."

As it seemed to me that the interest in words revealed in her questions and her answers might make it possible to follow

the development of the child mind in its elusive higher reaches, I made out a brief list of nouns, adjectives and verbs to serve as test words. These I put before her some time about her third, fourth and fifth birthdays, and noted the answers given to my questions as to meaning. The general procedure throughout has been much the same as that followed by Binet in similar experiments. In particular every care has been taken to make the conditions of the test as uniform as possible. For the nouns the general question has been, " What is so-and-so? " varied once or twice by, " What does so-and-so mean? " when the answers tended to assume a stereotyped form. The fact that a test was being made has always been concealed by pretending to play at a school, and introducing the questions about words among simple questions about numbers, places, etc. The tests have only been made in the forenoon, and at the least sign of fatigue " school " has been dismissed for a few minutes' interval.

In addition to the formal definitions, I have jotted down at various times the more spontaneous statements made when she herself had used some uncommon expression and had been called on for an explanation of it. These, as we shall see, are of great value for the help they give in interpreting the results of the tests.

In the present discussion, I propose to consider only the definitions of the nouns. Though the definitions of the adjectives and the verbs are not without significance, they do not throw as much light on the course of mental progress at this stage as the definitions of the nouns.

The following were the definitions given for the nouns chosen as test words, at the beginning of the fourth, fifth and sixth years :—

Three years of age: A fork is a thing you eat with; a school is a place where you read; a table is a place where you eat; a ring is a thing you put napkins through; a postman is a man that brings the letters; butter is a thing you put on bread.

Four years of age: A fork is a thing with prickly things over it—a big, long handle with prickly things; a school is a big, big place where a lot of children go; a table is a thing where you lay things on; a ring is a big round thing like that (she pointed to the seat of a chair), only far rounder; a postman is a man that gives letters; butter is a greasy stuff, and you can make butter balls.

Five years of age: A fork is for helping things into a spoon; a school is for teaching in; a table is for eating on and working on; a ring is for putting on your finger; a postman is for carrying letters; butter is for putting on bread.

The most striking feature about these lists is the complete change that takes place in the method of definition at five. In the earliest definitions the word defined is referred to a wider term, and the wider term qualified by the statement of a differential characteristic, somewhat after the manner of a true logical definition. Common articles like the fork and the ring are designated *things* with which something special is *done;* the postman is a *man*, who *does* something special, etc. The definitions at four belong to the same type, the main difference being that the *differentiæ* in three of the six cases (" fork," "ring," " butter ") are distinctive attributes and not functions of direct personal interest. Then for some reason or other the larger-term definitions entirely disappear at five and we have instead definitions of what is commonly assumed to be the infantile type, confined to a statement of what is done with or to the object, or what the object does, with a vague suggestion that this is the purpose for which it exists.

The common view, propounded in the first instance by Binet and supported by subsequent investigations, is that the child's earliest definitions are mainly of this last type, and that the transition to larger-term definitions, which normally comes about seven or eight, depends on a mental capacity not usually found in early childhood. (Cf. the Binet-Simon Tests). How then does it come that in this particular child the order of development seems to have been reversed and the definitions that are supposed to indicate the higher stage

of mental advancement have preceded those indicative of a lower stage?

What I believe to be the solution of the problem came to me when I was conducting another experiment with my little one at four years and nine months. For the sake of comparison with the results of other workers, I got her to define the thirty words used by Binet in his experiments with his daughters (" Perceptions d'Enfant " in the *Revue Philosophique*, 1890). With the exception of four, all the definitions were in the familiar form: " Bread is for eating," " A mother is to keep children," " A snail is for killing," and so on. This was the first time I had heard her defining words in this fashion, and it was all the more surprising because the casual definitions she gave me about the same time, when not simply synonyms, had still mainly reference to the larger term.

To put the matter to more definite proof, I made occasions for definition at odd times in the course of conversation during the next three days, and in this way secured a further set of thirty definitions. These, as I expected, were quite different in character from those given in the formal experiment. Here are some examples :— An artist is a painter; a studio is a house where they paint pictures; ivy is green leaves; a secret is a thing that people must not know; chums are people that know each other very well; a resolve is a promise; a promise is a word that people say, and if they don't do it it is not a promise; a bear is a beast that will eat you if it is wild; a difficulty is something you cannot do. Only one of this group of definitions took the " infantile form " : "a pipe is for smoking."

What is the explanation of the difference in the two sets of definitions? Partly, no doubt, it is to be found in the character of the words. In the one case, the objects defined are concrete ones of every-day occurrence. The child of five is so familiar with them that it takes a distinct effort of mind for him to analyse them for purposes of definition, and when asked what they mean he hesitates and halts, and frequently shirks the question by making what are really irrelevant remarks. "What is a knife? " one asks. " A knife," says the child, then stops as if baffled. " A knife is a knife." Another pause: then, " A knife is for cutting with." That is not all he *thinks* about a knife, but it is what comes most readily to the mind at the moment of answering. Again : "What is a bird? " The question is so simple that it puzzles him, and he goes off at a tangent by saying that " the bird flies." " But what *is* a bird? " Answer : " A bird is for flying." (I take these last two examples from my experiment with Binet's test words. For further examples, see Chamberlain, " Studies of a Child " in the *Pedagogical Seminary*, 1909). In the other case, where the words defined are actually being used when the meaning is asked, most of the words are at the growing point of the vocabulary and some of them are rather strange to the little talker. Yet curiously enough they seem to cause less difficulty on the whole than the more familiar terms. Words like " calamity " (" a not very nice thing "), though vaguely defined, do not embarrass nearly so much as the ordinary everyday words like " knife " or "bird "; and because the mind is actually grappling with their meaning, the definitions come forth with the stamp of the generalising intelligence on them.

But the difference is not completely accounted for in this way. It is instructive to note that the concrete terms which are crudely defined under test conditions are for the most part defined quite differently when taken in their context in the child's interests. The same child who says a knife is "for cutting with," when the word occurs in a series of formal questions, gives the superior definition that it is " a thing that cuts " when asked about a knife that he is speaking about himself. This plainly shows that the attempt to test the child's ability to define by compelling him to attend to detached words introduces a disturbing factor into the situation and changes the character of his thought. In presence of the abrupt demand for the

meaning of a word with which at the moment he is not concerned at all, the normal processes of his mind are thrown out of gear. He loses hold of the relation between the object and other objects which leads him, just as much as any adult, to refer everything to some wider group, and he puts all the stress on some characteristic action done by or to the object. The result is a definition which is so far characteristic of early childhood that it reveals the predominance of the interest in what things do or have done to them, but which utterly fails to show the real structure of the child mind.

Let us see now what bearing all this has on the fact that the child whose case we have been considering began with larger-term definitions and changed to definitions in terms of action. Two questions arise: first, as to the significance of larger-term definitions in a child of three; second, as to the reason for the change of method at five.

With regard to the first point, it may be said that the ability of a child of three to give definitions which, in form at least, are like those of an adult argues precocity, and that consequently any conclusions about children in general are not warranted. To this, it seems to me, the answer is twofold. In the first place, the contention assumes either that the ordinary child of three cannot define his terms at all or that he does so in a way quite different from an adult. The former proposition may be true, but until it is proved to be true it is a mere assumption. The latter proposition, so far as it has any definiteness, simply reasserts the view that there is a special type of definition peculiar to early childhood; and that, I hope I have shown, is open to grave doubt. In the second place, the fact that this particular child's definitions under the usual test conditions are those generally recognised as normal for one of her years makes it difficult to maintain that her earlier performances were in any proper sense abnormal. It is highly improbable that a child who was precocious at three would have ceased to be precocious at five.

Does that mean then that the ordinary child of three may be expected to define objects by reference to some kind of genera and to indicate some kind of differentiating character pertaining to them? That indeed I am not prepared to assert. Many children of three, perhaps most children of three, are unable to define at all. But the reason, I suggest, is not that there is any incapacity on their part, but only that they lack the training in speech without which the powers of thought capable of development remain undeveloped. I firmly believe that any intelligent child, trained to know with some precision what it speaks about, and to speak with some precision about what it knows, will really *think* about the facts of its experience; and thought, even within the narrow limits of a very immature mind, always implies such a subsumption of facts under categories as finds articulate expression in larger-term definitions. That is not to say that even when all the conditions are favourable the child will in every case tell what an object is by indicating some group of objects to which it belongs and referring to some distinctive feature of it. As a matter of fact, that is not the case. Sometimes he will tell what the object means for him by giving a synonym, or by specifying the parts that interest him most, or by referring to its attributes or functions. Sometimes his attention will flag, and instead of saying what the object is he will make a remark about it which can by no stretch of imagination be regarded as a definition at all. But given the right training and the right test, there will always be implicit, and generally explicit, the twofold reference to an including group and a differential character, which is the essence of true definition.

That brings us to the second question. If definition at every age tends to the same form, how are we to account for the aberration which we have noted as occurring in the test under consideration, at five years of age? The fact that the element of artifice involved in asking a young child the meaning of detached words provokes a special response, while explaining the

type of definition commonly supposed to be characteristic of children of five, obviously does not explain why a child who has given formally good definitions at three and four should adopt a seemingly inferior method at five. The explanation of the change, I am inclined to think, is to be found in the greater mental maturity of the older child. The divorce of a word from its context in personal interest which produces a certain confusion in the processes of thought at five has little or no effect at three, because experience is then less connected and thinking usually goes on in the spasmodic way which the test requires. Consequently the definitions given under the conditions of the experiment at three tend to take the normal form while those given at five tend to depart from it.

The view which has been advanced here is in no way inconsistent with the use made of definition in the Binet-Simon tests. Binet assumed that the older a child grew the more likelihood there was of the logical type of definition when the question is asked: "What is so-and-so?" and I see no reason for thinking he was wrong in his assumption. What presumably happens is that the growth of mind brings with it an increasing power of overcoming the disturbance caused by the presentation of detached words for definition. The result is that the child of seven or eight returns on a higher level of mind to the method of definition from which he had departed for a year or two at a period of instability.

But though there is nothing in what has been said to invalidate the definition test as an index of mental development, there is good reason for insisting on a different interpretation of its results from that usually given. As is shown by the vogue of the Montessori system, with its crude sensationalist psychology, there are many people who are inclined to under-rate the mentality of the young child and to think of him as a sense-bound animal devoid of the higher mental activities. This makes it all the more necessary that in the matter of definitions and of others of a like kind in which these higher activities are involved, we should be on our guard against allowing the imperfections of our observations and our experiments to obscure the substantial identity of the infant and the adult mind. It is only by realising that the mind at all its stages is fundamentally the same in spite of the profound modifications due to the progressive organisation of experience that we can do justice to the capacities of the child.

Suggestions for Study and Practice.

A Time-Table and a Nursery School.—"The time-table is a creature of the school, it does not belong to the nursery, yet there are definite times for certain activities in the nursery which must be strictly observed. These have to do mainly with the physical health of the child, and depend on attention to the formation of good personal habits, to regular and satisfactory meals, to adequate time and place for rest and sleep. It should be possible to allow for these in a general plan of the five hours a day, while the major portion of the time between might be left free for play, music, story telling and looking at pictures."—*Ø'outrina a Bone*, "The Nursery School," *Educational Handwork*, March, 1914.

Learning Methods and Times.—"In the following experiments only two [methods] were used. I have designated them as (1) the 'continuous method,' and (2) the 'once-per-day method.' In the former, the subject is allowed to memorize the material *en masse*, *i.e.*, in one sitting; in the latter, the subject memorizes the material by reading it once a day (and only once) until it is memorized...The time taken by the 'once-per-day' method varies approximately as the length of the material. When, however, we turn to the 'continuous' method, we find that this relation holds only for the shorter passages. As soon as the passage becomes too long for the mind to grasp it as a whole, the time mounts up rapidly...In short it is obvious that the 'once-per-day'

method is, to say nothing of giving a far superior retention, far more economical than the 'continuous' method."—*D. O. Lyon*, "The Relation of Length of Material to Time taken for Learning," *The Journal of Educational Psychology* (U.S.A.), February, 1914.

Imagination.—"Children vary very much in imaginative power, but imagination is certainly a normal faculty of childhood. It shows itself in various ways; among others, in a habit of romancing that seems harsh to call lying. I should draw a rather strong distinction between an untruth told to gain some advantage or avert some unpleasantness, and an untruth told from a kind of perverted imagination; for things of the mind are often very nearly objective realities to children. I suppose the human mind starts with its imaginative power more strongly developed than its perceptive power. So the earliest thing that we have to learn is the reality of things. The dream-world is just as real to the little child as the world of so-called realities. But gradually the external world asserts itself, and as it does so one of two things happens: either the faculty of imagination is stifled and dulled, or, under the wise guidance of skilful teaching it turns to the world of external things and finds its true place there. In Browning's phrase, we mix our souls with the inert stuff, and under the shaping spirit of imagination we see the world as it truly is, because we see it imaginatively."—*Canon J. H. B. Masterman*, "The Cultivation and Use of the Imagination," *Journal of Education*, April, 1914.

The Child-Study Society and the Constituent Societies.

Council Meeting at Birmingham.—At the Council meeting recently held at Birmingham it was resolved: (1) that the name *The Child-Study Association* shall in future be the name of the body, in place of *The Child-Study Society*; (2) that the Extension Committee become an Advisory Committee for the purpose of initiating investigation into matters relating to Child-Study, and for suggesting and arranging for expert advice upon methods; and (3) that Hon. Secretaries of Constituent Societies be *ex-officio* members of the Extension Committee.

Tunbridge Wells Society.—This Society has realised for some time that it has not been carrying out to the full the purpose of its existence, viz., to study the child first-hand, in other words, to carry out some research work.

It has been rather looking to the Central Association to take the lead in this direction, by sending to its constituent societies from time to time a series of questions or problems to be worked out by the members.

Failing this, the matter has been taken up in a small way by the above Society, and the following question was propounded, with a view to ascertaining what were children's ideals, ten minutes being allowed for the written answer. The question was:—*If you could change your personality, who would you desire to be?* Some two thousand replies have been received, written by pupils of both sexes, ranging in age from six to eighteen, and from secondary and elementary schools. The girls' papers, as may be expected, show a wide choice, varying from royalty to nurse, etc.

The boys' papers showed quite a different choice, viz., of people leading a more active and adventurous life.

Altogether the experiment has been interesting, and though nothing of a very original nature has been elicited, yet the Society feels that it is in this direction the work of the Child-Study Association should proceed, and the members await with interest the suggestions of the Advisory Committee that has been appointed.—J.A.P.S.

Notices and News.

Corrections.—The title of Dr. Ballard's paper (see "Editorial Notes" for April) should have been "Obliviscence and Reminiscence."

The address of the Hon. Sec. for the Journal is: Mr. H. R. Crisp, 45, Corringham Road, Golders Green, London, N.W. (not N.).

Our Library.—The Council of the Child-Study Association request local secretaries and others to suggest names of books which are specially suitable for our library but not at present in it. Such suggestions should be sent to Miss Mary Louch, Colbury House, Totton, Hants.

The Study of Criminals, Paupers, and Defectives.—Mr. Arthur MacDonald, "The Congressional," Washington, D.C. (U.S.A.), has circularised our Home Secretary and public authorities in order to interest them in "a general plan for the establishment of a laboratory or bureau to study the criminal, pauper and defective classes." He urges that "A bureau for moral health is as needful, and perhaps more so, than a bureau for physical health...For a practical beginning, the idea is to have a few young men with medical, psychological and anthropological training first

study the inmates (especially the young) of your penal and reformatory institutions. One of the main objects is to investigate causes of crime, and by knowledge thus gained, furnish a more rational basis for methods of reform." He has sent a note to our Association, saying, "I should be glad if your Society could take early action in this matter, and your members individually use their influence towards establishment of this work."

Health Conference Exhibition.—The Victoria League has arranged for a conference at the Imperial Institute, London, from May 18th to 21st, 1914. The section on "The Care of Child Life" will include discussion on infancy and health, the school child, and the child as wage-earner. The Secretary to the Conference is Miss R. V. Gill, Millbank House, Westminster, S.W.

Reviews.

Eugenics Review. April, 1914.

In this issue appears the first part of an article by Mr. Cyril Burt, entitled "The Measurement of Intelligence by the Binet Tests." Mr. Burt points out that so far there has been no systematic discussion of the merits and limitations of Binet's method. Such a discussion is of importance because of the popularity of the tests and the danger of these becoming stereotyped. After indicating that Binet's aim is the measurement of intelligence in terms of its development he proceeds to examine the assumptions upon which the method rests, and shows that these have not yet been verified. The chief assumptions are as follows:—1. That variations in intelligence may be considered as different degrees of one and the same unitary function. 2. That this unitary function is native and inborn. 3 That differences in the amount of native intelligence possessed by different persons can be measured in terms of age. The provisional character of Binet's position due to these assumptions, for which he produces only occasional evidence, gives a provisional character to the tests. Comparative work is needed upon the psychological or diagnostic value of the several tests.

The part of Binet's work which has received the greatest commendation is his attempt to express individual differences, and especially sub-normal differences, in terms of mental years.

The assumptions in which analogies between the states of defect and states of immaturity are based are as follows:—1. That all differences in intelligence may be regarded as falling within a single dimension and lying along a single scale. This involves the assumption that abnormal personalities are cases of arrested development. 2. That annual increments of intelligence may be treated as equal in amount. Both these assumptions are untenable, and therefore, except for rough-and-ready purposes, Binet's intention of measuring intelligence in terms of mental years seems impracticable.

The Pedagogical Seminary. March, 1914.

In this issue there are two studies on the vocabulary of individual children, both girls. In one case the father collected words used by the child during a whole fortnight in each of the years two, three, and four.

So far as could be arranged the circumstances of the child's life were much the same in each of these fortnights. The words used were then classified under various headings, and the classifications for each year were compared with each other. By this means it was possible to show the development of the child's vocabulary, not merely in the total number of words in the vocabulary, but by the change in the proportionable number of times various parts of speech were used. The relation of the development of the vocabulary to the widening of experience is also clearly indicated in this study.

The second study, extending over a period of six months, is of less interest because it does not deal with development, but it is of value as a study of the actual vocabulary (consisting of 1,900 words) of an intelligent child of three.

Archives de Psychologie. February, 1914.

In an article entitled *Tests of Development and Tests of Aptitude* Monsieur Claparède discusses the Binet-Simon Tests and their modifications by Meumann. Mental tests were originally used to determine individual mental types. Binet used them to determine the degree of the mental development of an individual. Thus a quantitative was substituted for a qualitative problem. From a practical and pedagogical point of view these tests are of considerable value, but they are less satisfactory from a psychological point of view, because it is not at all certain at what point a mental function expresses a natural aptitude rather than a degree of development.

After giving some examples to indicate this difficulty, Claparède draws the conclusion from them that the distinction between a test of natural aptitude and a test of development depends on the variability, which is discovered by means of a given test, among individuals of the same age. In other words, a test is a test of aptitude when it reveals a mental characteristic which differs more, on the average, among individuals of the same age, than it differs, on the average, among individuals of different ages. It is a test of degree of mental development when the reverse is the case.

Another article of considerable interest in this number is *The Psychology of Religion,* which includes a comprehensive bibliography on the subject by G. Berguer.

Publications Received.—*The Journal of Education; Educational Times; Secondary Education; Kindergarten* (Berlin); *Child Life; Le Jardin d'Enfants; The American Teacher* (U.S.A.); *Eugénique* (Paris); *Archives de Psychologie* (Geneva); *Parents' Review; Educational Review* (U.S.A.).

Child-Study.

The Journal of the Child-Study Society.

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The Nervous Child.

By Leonard Guthrie, M.A., M.D., F.R.C.P.

The Nervous Child. A nervous child is not merely one that is timid and shy, one that trembles, shakes, changes colour and stammers when notice is taken of it. No doubt these are obvious signs of what is called nervousness, but they form but a part of the nervous or neurotic temperament. What is meant by the neurotic temperament? Before answering this question it is necessary briefly to remind you that the nervous system, brain and spinal cord as a whole, is made up of countless myriads of nervous systems in miniature, each of which is called a "neuron." Each neuron consists of a centre or cell, which receives stimuli or impressions conveyed by sensory nerves from all parts of the body (through what are called the afferent or sensory tracts in the spinal cord and brain). Each neuron stores such impressions in the form of potential energy, which is converted from time to time into active energy distributed through the efferent or motor tracts and nerves to the various muscles and organs of the body.

The main functions of the nervous system are to receive and store impressions or stimuli (from the periphery) and to give them out in the form of energy or action. I make no attempt to define "energy." Energy is life, and no man knows its nature or origin. But it is certain that all growth and development of viable structures depends on irritation or stimulation. As a concrete example, I may mention that a very passable frog can be created by stimulating its unfertilised ovum with a sterilised glass rod.

All nervous tissues are sensitive, in that they respond in some way to various kinds of stimulation. Vitality, including reflex action, consciousness, mental and emotional capacities, depends on the degree of nervous irritability or responsiveness to stimulation which prevails in the individual. From the moment of birth, irritant stimuli pour incessantly upon our brains through the medium of the organs of special and common sensation.

Temperament results from the mode in which stimuli are perceived, responded to in the form of motor reactions, emotional or otherwise, and from the capacity of storing experiences of past stimuli, recalling them to consciousness, comparing them, and formulating ideas, judgments and conduct based thereon.

The neurotic temperament consists in a peculiar hypersensitiveness in the perception of stimuli, an unduly active response thereto, together with instability or peculiarity in regard to storage of impressions, and their conversion from potential into active energy. In most cases though not in all, there is deficiency of control over normal primitive reactions to stimuli or impressions, and in all cases, without exception, there is a strong tendency to fatigue and prostration arising from expenditure of energy.

It may seem a hard saying that *mental* and *intellectual* processes are but reactions to stimuli, yet on reflection it is clear that they are all evolved through stimulation of our eyes and ears by light and sound, of our olfactory and taste organs, by odourous and sapid substances, of our organs of common sensation by heat, cold, painful and pleasurable impressions.

An infant permanently incapable of perceiving, registering impressions, and reacting to stimulation of its special sense nerves and of nerves of common sensations (both superficial and deep), must

necessarily be mindless. Fortunately when one portal is closed others are open to stimuli; otherwise the deaf-mute, or congenitally blind person would also be an idiot. Defective appreciation of stimuli through one afferent or ingoing channel may be compensated by increased sensitiveness to stimuli passing through another. The origin of consciousness is in the simplest sensations, and by them all the higher faculties of the mind may be developed, presuming that the brain, which I for one, regard as the organ of the mind, be normal.

The most striking proof of this is in the case of Helen Keller. Rendered deaf and blind in infancy, she would have remained an idiot throughout her life, but talents and intellect of the highest order were cultivated in her, solely through the medium of her sense of touch.

The primitive instincts of the new-born babe are reactions to stimuli of the simplest nature. It sucks, if anything be placed in its mouth, cries and struggles if hungry, hurt or uncomfortable. At first it reacts only to unpleasant or painful stimuli. For the first few weeks of life, response to pleasurable sensations is negative. It is not as a rule until four or five months of age that it delights its parents with the tribute of a smile expressive of contentment.

By degrees, more complex emotions than those of mere pleasure, and its reverse make their appearance. But all are primarily reactions or motor responses to stimuli which are pleasant or unpleasant to the individual. In time, when the ingoing paths of sensation and the outgoing motor paths become developed by use, and the centres in the brain become stored with myriads of impressions or perceptions, derived through the organs of special and common sensation, the complex and varied emotions which make up conscious personality are elaborated. All of us will probably agree that the neurotic child or person is essentially *emotional.* But what are *emotions?*

Emotions, like instincts, are involuntary motor responses to sensations or stimuli. Without the involuntary motor response, that is the expression or attitude of an emotion, the intensity and even the existence of an emotion cannot be gauged or surmised by an observer. Some maintain that it is the expression or attitude itself which gives rise to an emotion, and not the emotion which causes the expression or attitude.

Darwin said many years ago: "Most of our emotions are so closely connected with their expression that they hardly exist if the body remains passive." Professors James and Lange trace emotions to sensations derived from the activity of certain muscles (voluntary and involuntary) and glands. Under a stimulus, pleasurable or otherwise, voluntary muscles are thrown into activity and the characteristic attitudes expressive of emotion are involuntarily assumed. The stimulus also excites activity in *in*voluntary muscles, giving rise to certain changes in the circulation, such as increased or diminished frequency of the pulse, flushing, pallor, "goose skin," and also to increased or diminished activity of the lachrymal, salivary, intestinal and sweat glands.

The various sensations induced by attitudes, gestures, circulatory, secretory and other physical conditions and changes, give rise to the different kinds of emotions; and the neurotic child or individual is unduly *emotional* because the physical changes mentioned in heart, circulation and glandular secretion are too readily induced in him by insignificant internal or external stimuli. Both sensitiveness and reaction to such stimuli are exaggerated.

The mechanism by which the physical concomitants of emotion (namely, acceleration or slowing of the heart, pallor, flushing, trembling, changes in the character of respiration, increase or suppression of glandular secretions) are produced, is the *sympathetic nervous system,* which governs circulation of the blood and therefore the functions of all organs in the body. Hence emotions must be regarded as dependent on the sensitiveness and activity of the sympathetic nervous system, and the emotional or neurotic person is one

in whom such sensitiveness and activity are unduly heightened.

It is beside my purpose to dwell upon the *medical* aspects of the neurotic temperament, but I may say that the great majority of the disorders of health with which it is associated are due to irritability, hypersensitiveness, and abnormal excess of reaction to stimuli on the part of the sympathetic nervous system.

It is a curious fact that the physical concomitants of emotions become in time so readily induced in neurotic individuals that they cease to be associated with the emotions themselves, but are regarded by the patient and his friends as symptoms of various fell diseases.

Feeling tone. I have already mentioned that pleasant and unpleasant sensations in response to stimuli are the foundation of all other emotions. Scientific instruments of precision have shown that positive or pleasant sensations or tone of feeling, are associated with dilatation of blood vessels, acceleration of pulse, increase in depth of respiration, whilst negative or unpleasant feeling tone is associated with the reverse of these conditions.

It is on the exaggeration of a pleasant, though far more frequently an unpleasant, "feeling tone" that the ever-changing mental moods, phases and fancies, of neurotic individuals depend.

Control of emotions. Although neurotic persons are said to be lacking in self-control, the emotions are not under direct control by the will. We can work up a spurious emotion by assuming the attitude which characterises it, as every actor knows, and we can partly counteract an emotion by assuming a contrary attitude. For instance, we can control a desire to laugh by putting on an air of preternatural solemnity. But although the outward expression of an emotion may be voluntarily suppressed, and the emotion itself dulled to some extent by such suppression, it is impossible to stifle the effects of a stimulus or shock to the nervous mechanism of circulation, respiration and secretion. We cannot prevent our eyes from filling, our face from flushing or becoming pale, our heart from throbbing, our respiratory rhythm from altering, our mouth from watering or our flesh from creeping at a sight, or sound, or thought.

All these conditions are essential, whereas the characteristic attitudes are only adjuncts to the expression and experience of an emotion.

Although the neurotic individual is one whose emotions are readily excited by their physical concomitants, and these again are reactions to most insignificant stimuli, many whose emotions are most readily aroused and deeply felt, display them least by outward manifestations, and these form an important class of nervous or neurotic persons.

Types of Neurotic Temperament. Although sub-divisions are endless, there are two main types of neurotic temperament: (1) The *unrestrained;* (2) the *restrained* or receptive type.

The Unrestrained Type. In persons of this type there is supersensitiveness and excessive reaction to all forms of stimuli, physical and mental. It may be recognised in young infants by the abnormal severity of the symptoms attending any ordinary ailment, and the readiness with which digestive functions are impaired. Their discrimination in taste is precocious; anything which they do not like violently disagrees with them, and the greatest difficulty is experienced in finding a diet which suits them.

Their temperature rises on the slightest provocation, and a common cold, especially if they happen to be cutting a tooth, makes them seriously ill. They are bad sleepers, wake screaming at any sound, and cannot be soothed to sleep again. Even before the age when babies usually begin to "take notice," they start and show signs of fear at a strange face, or at any novel experience.

In later childhood they are invariably thin, almost emaciated, in spite of unlimited cod liver oil and attempts to "feed them up." They are pale and sallow, and therefore supposed to be anæmic and in need of patent preparations of iron, which

do not improve their complexions or powers of digestion. They have dark circles round their eyes, dilated, active pupils and puffy lower eyelids, which are tremulous when closed. Their expression is animated, their colour changes rapidly, they talk fast and volubly, and ask strings of questions without waiting for an answer. They cannot keep still for a minute. For days or weeks together they will be full of life and energy, and never seem to tire; then they collapse utterly in an attack of abdominal pain, headache, vomiting, pyrexia, usually attributed to "gastric catarrh" or a bilious attack, but in reality due to exhaustion of an excitable and unstable nervous system.

They are peculiarly liable to what are called "tics," or habit spasms, in which they blink, pull faces, wriggle and writhe, or indulge in various stereotyped gestures, tricks and antics at short intervals. Night terrors, sleep walking and sleep talking are common events. They suffer from poorness of circulation, cold extremities, dead fingers, sweatings, cardiac palpitation—often mistaken for evidence of heart disease. Their skins are sensitive and irritable, and frequently disfigured by nettle rash, eczema and other eruptions.

Their intelligence is normal or so much above the average that they are regarded as "Wunderkinder." They are high spirited, but easily discouraged; timid, imaginative and superstitious; apprehensive of trouble; apt to exaggerate all difficulties, slow in making efforts to meet them, and worried by trifling causes. They are demonstrative of affection, yet often selfish and exacting, passionate at times, but more often querulous and depressed. They are sometimes immensely vain, and burdened by a sense of being unappreciated, craving for sympathy and thinking themselves ill-used if everyone does not give way to them. They resent all discipline, and argue instead of obeying.

They are quick at learning, but forgetful of facts, and incapable of any kind of application. They will work with feverish energy in fits and starts, but are soon exhausted. Some may achieve brilliant success in art or literature in after life, but the majority fail from lack of industry, method and common sense and judgment. They fall a prey to neurasthenia in all its forms, and become the mainstay of "rest cure" institutions. Their saving grace is sometimes a sense of humour and of the ridiculous, which may be cultivated to their advantage.

The restrained emotional type. In persons of this type the emotions are very strongly felt, but power to control their outward display is equally strong. Such children are observant, intelligent, but so reticent that they often pass for being dull, sullen and obstinate. Their expression and their attitude are apathetic, their gait is slouching, slow and clumsy. They are often extremely sensitive, shy and proud. They appear wanting in affection, but really yearn for it, and brood over slights, imaginary or otherwise, until they become morose, gloomy and revengeful.

They suffer nagging and bullying at home and school with apparent stolid indifference, except for occasional outbreaks of fury. They are solitary in habits, introspective, prone to self-analysis, imginative, superstitious, with a morbid love of horrors, and equally morbid dread of them. They may harbour various kinds of secret fears or "Phobias," and sometimes develop abnomally conscientious scruples of moral and religious nature. They take life seriously, and have little or no sense of humour.

This disposition, with its characteristic suppression of the outward display of emotions is as exhausting as that of the unrestrained type in which emotional excess is obvious, and it is associated with many similar complaints.

The neurotic temperament is not necessarily morbid. The keynote to the neurotic temperament includes hypersensitiveness to the stimuli drawn from the environment and readily induced exhaustion of mental and physical functions. But I wish to emphasise the fact that the neurotic temperament is not necessarily morbid.

Everyone who is not a mere cabbage or mollusc, so to speak, must be neurotic to

some extent, and everyone who attains any eminence in the imaginative, artistic, and literary, and indeed in most other lines, is essentially "hypersensitive" to impressions. Our main object is to recognise the neurotic temperament in early life, to realise its tendency to become morbid and to prevent its being so, if we can.

Ætiology of the Neurotic Temperament. The neurotic temperament is partly inherent and inherited, and partly the result of environment. The neurotic child is most frequently the only one, or, what is practically the same thing, a long interval of years separates him from brothers and sisters. He may be the pet, or the ugly duckling of the family, or on account of delicacy he is treated differently from the rest.

The parents of the only child are often neurotic or neuropathic themselves, and the child, having no companions of his own age, learns to imitate his parents, to share their worries and anxieties about himself, his pains and ailments, and the household cares in general, and becomes a youthful neurasthenic or hypochondriac. Environment has more to do with the development of the morbid side of neurotic temperament and its ailments than heredity. Parents are not always to blame; the influence of nurses, governesses, teachers, and over-bearing brothers and sisters, has to be taken into account.

As regards the exciting cause of nervous breaks-down, and the many nervous disorders to which neurotic children are liable, any severe illness may bring them to the fore, though frequently they arise in children who are never very ill, but never very well. A sudden emotional shock may be the exciting cause of hysteria or neurasthenia, but more frequently they are the outcome of long periods of fear, worry and anxiety, suppressed or not, as the case may be, or of educational over-pressure.

The medical man is always called upon to discover the cause of juvenile neurasthenia. If the child blinks, or sniffs, or wriggles, his eyes or nose are supposed to be at fault; or he is suspected of harbouring worms. His aches and pains are attributed to rheumatism, his barking cough to weak lungs, his attacks of stomach-ache and vomiting to threatened appendicitis, his changes of colour, palpitation and occasional faintness, to heart disease, his headaches to incipient brain trouble. Now, it is of course necessary to bear in mind that neurotic children *may* suffer from organic disease of the heart and other organs, but the symptoms which are often supposed to indicate organic disease may be merely those of nervous irritation and exhaustion. In all neurotic children "great events from little causes spring." The supersensitiveness and ready response to irritative stimuli of any description, which make up the neurotic temperament, have in all cases to be considered.

The mere suggestion that a child has a weak heart or weak lungs is readily assimilated by anxious parents, with results disastrous to the child's welfare and prospects in after life.

The Fears of Neurotic Children. Fear is closely allied to the instinct of self-preservation. The physical signs of fear are due to a stimulus which produces the bodily changes in circulation, secretion, and so forth, which become associated with the feeling of alarm and desire for protection. In neurotic children these physical signs are more readily induced, and so they are more susceptible to fear than others. Excessive and unnatural timidity is shown in young infants by starts, and screams, and trembling at sights and sounds which are ignored, or only excite curiosity or amusement in normal children, who are beginning to take notice. Everything which is new and strange to them begets alarm. Their mothers are often unwilling to take them out because they become so frightened at common objects which they see, and noises which they hear.

The causes of fear in children can hardly be enumerated. It is impossible to foretell what may suggest a sense of the uncanny or supernatural to an imaginative child, and therefore alarm it. They may invest inanimate objects with the most malignant

qualities. I have known a child who was haunted by fear of a fur foot-warmer, which he called a " Bomp." Another was obsessed by fear of a talc ventilator, which he referred to as a "flapper." He resented being taken to strange places by day unless reassured that no "flappers" would be there to upset his peace of mind.

Fear, whether of the supernatural, or of physical ill-usage, or of ridicule, may have disastrous effects on mind and health. Much of the self-consciousness, introspection, hypochondriasis, neurasthenia and hysteria which affect adults, may be traced to the effects of fear in early life. Fear in a child may be the end and not " the beginning of wisdom." It should be remembered that neurotic children, especially those I have described as of the restrained type, are particularly prone to secret dreads and apprehensions which they keep to themselves. In young children the earliest indication of fear should be recognised and should meet with sympathy, encouragement, explanation and removal of the cause if possible, and never with badinage, or nonchalance, or contempt.

The quintessence of fear is shown in night terrors. Night terrors should not be regarded merely as humorous consequences of over-eating. They always indicate ill-health, which may be temporary and trivial, or serious and lasting. The difference between night terrors and nightmare is only one of degree, and this depends on the temperament of the dreamer. A stolid, unimaginative child may over-eat himself and awake screaming at a *" nightmare,"* but he is easily satisfied that it is " only a dream," goes to sleep again, and is none the worse next day. The neurotic child is, however, rendered temporarily insane by the vividness and horror of his dream-hallucinations, he may suffer severely from emotional shock at the time, and is sometimes haunted night and day by dread of its repetition. Children who brood all day over the recollection of some frightful dream are apt at night, as Charles Lamb expressed it, " to wake into sleep and find the vision true." Their dread of " witch-ridden pillows " (dread which they often keep to themselves), may destroy their health of mind and body.

Typical night terrors usually occur in children aged between three and eight years. The attack almost always occurs within the first three or four hours of sleep. Piercing screams are heard, and the child is found sitting up in bed or crouching in a corner of the room, with hands outstretched as if to shield himself. Sometimes he is trying to get out of window or to open the door, and he may escape from the room and run screaming down the staircase. His face expresses wildest alarm, his eyes are widely opened, the pupils dilated, and he gazes intently in the direction in which he has located the apparition which frightened him.

He may give a clue to its nature by shrieking, " Black faces ! " " Horrid man ! " or some such exclamation. He may cling instinctively to anyone within reach, but he does not at first look at or recognise persons. His attention is fully taken up by the imaginary object of his fears. After a few minutes he recognises his surroundings, but sweats and trembles, turns pale and seems exhausted. He will beg not to be left alone again, or that his hand may be held. He soon dozes, but sobs and starts for a time, until sleep becomes sound.

Next day, there is usually some recollection of what has occurred, but in some cases, even when the child has answered questions more or less rationally, he has not been really awake, and seems to remember nothing about it. Older children may seem to have forgotten their dreams either because they are ashamed to speak about them, or because they are too horribly complex for verbal description.

Night terrors and dreams of any kind are reactions to dimly felt bodily sensations or stimuli. The interpretation of the sensations which give rise to them are peculiar to the individual. Dreams of being engulfed by tidal waves or buried alive by avalanches, may arise from partial asphyxia due to close atmosphere, or to actual obstruction of respiration from

any cause. Dreams of being exposed on an iceberg in the midst of a vast frozen sea may arise from feeling cold. Dreams of being tortured may be produced by slight discomfort. Dreams of being pursued, yet unable to stir may be due to actual restraint of movements from heavy bedclothes or pressure of one leg on the other.

The connection, however, between the cause and the content of the dream is not always easy to explain. Why, for instance, should indigestion produce visions of hideous faces, or of a gigantic tooth-brush bristling with hostile intentions, instead of sensations of abdominal pain or discomfort? Perhaps the explanation is that in the semi-consciousness which obtains in dreams a peripheral stimulus of any kind acts as a master key, which unlocks the store-house of past impressions and sets them free.

The ugly face, or gigantic tooth-brush dangling as an advertisement over a shop, has excited but passing curiosity by day, but by night the awakened mental picture of it is disturbed by incongruous association of ideas, and it becomes invested with malignant attributes. The peripheral stimulus is no doubt unpleasant in character, and the dream becomes so too. Even a trivial event or experience may become a terror by night. But should the experience have excited alarm at the time, its after effect will be quadrupled in dreams. Hence night terrors are peculiar to nervous, timid children.

Medical treatment is always necessary in cases of repeated night terrors, but it will not always provide a cure. It is also necessary to correct morbid tendencies to dwell on horrors seen and unseen; to protect active and sensitive, as well as dull brains from educational over-pressure, and to shield nervous children as far as possible from thoughts, words and deeds which are calculated to increase their emotional instability.

Exhaustion due to Mental and Educational Overstrain. In considering mental overstrain one must remember that emotional excitability may have as much to do with it as educational over-pressure. Quite apart from the actual amount of mental work done, fear of failure may in one case produce overstrain; in another ambition to succeed may lead to exhausting emotions, such as jealousy, hatred and all uncharitableness towards competitors; whilst in a third, disappointment at want of success accounts for exhaustion and nervous breaks-down. Girls are perhaps more apt than boys to break down under such conditions, and especially those of the "restrained type."

Educational overstrain may result from over-taxing the memory, from enforced concentration on uncongenial subjects, and from exacting practical industry from those who are by nature abnormally contemplative, thoughtful, imaginative, or volatile and easily distracted.

Memory is the faculty by which past experiences are recalled. Impressions derived chiefly through visual and auditory stimuli, but also to a less extent through olfactory, gustatory and cutaneous nerves, become "photographically lined on the tablets of the mind."

Memory implies repetition of the stimuli through one or other channel. Some react most easily to things which they have seen, and others to those which they have heard. Memory in some is automatic and effortless, in others the picture is "fogged," and requires a strangely laborious process in which association of ideas, arbitrary and absurd, or logical (as the case may be), in order to develop it. Attitudes, or the sensations induced thereby, are in some people aids to memory, just as they are aids to all in the expression of an emotion. We must all know instances of individuals who twiddle a button or a lock of hair when engaged in recalling past impressions.

Many clever children, early and without effort, grasp general ideas and principles, but are slow in committing to memory solid, dry-as-dust facts, and are quickly forgetful of them. It is the attempt to cram them with arbitrary facts, and also to force them to disgorge them periodically on demand which causes exhaustion.

Fact cramming not only cramps the intellect and gives no scope for thought, but may reduce the child to Paul Dombey's condition of mental chaos, in which, "whether twenty Romulses make a Remus, or hic, hæc, hoc is Troy weight, or a verb always agrees with an Ancient Briton, or three times four are Taurus, a Bull" become open questions.

To judge from the frequency with which one is told that nervous school children are "doing sums in their heads all night long," simple arithmetic appears to be the most exhausting subject in the curriculum. Efforts to learn the multiplication table have quite as bad effects, and many of us sympathise with little Marjorie Fleming when she wrote, "The most devilish thing is eight time eight, and seven times seven is what nature itself can't endure." Leigh Hunt said that he never succeeded in learning it at all.

The old-fashioned method of teaching history and geography by making children learn long lists of dates, and names of capitals and counties destroys every vestige of interest in the subjects, and is irksome and exhausting to the pupils.

Enforced concentration on any special subject may lead to brain exhaustion. Most intelligent children seek variety and resent specialism. It may be true that they are taught so many subjects that they only derive a confused smattering of all as the result of schooling. Yet general information can always be turned to account, even though its accuracy be doubtful and need verification.

Concentration, even on congenial subjects, may cause fatigue, and before blaming a child for laziness one should ascertain whether he is in fact incapable of prolonged mental effort. Even Darwin confessed that his brain was not constructed for much thinking, and he never worked for more than an hour or so at a time at his special subjects. No school lesson should last for more than forty-five minutes, and an interval of ten minutes, to be spent in fresh air and exercise, not drill, should always elapse between each lesson.

A defective memory is often due to defective eyesight, and needless to say, attempts to improve powers of observation by insisting upon the child's using its eyes, without correcting faulty vision, is a common cause of prostrating headache, and indirectly may lead to mental overstrain. Similarly, dulness and inattention may be due to enlarged tonsils and adenoid vegetations, and if treated by blame and punishment the child's sense of injustice and exasperation may lead to mental breakdown, as well as other physical ill results which arise from neglected adenoid vegetations.

Precocity and pseudo-precocity in neurotic children. Precocity has been regarded as of evil omen in most countries and at all times. The equivalent of "So wise, so young, they say do not live long," is found in many languages. Precocious children are generally supposed to be delicate, and doomed to early death, or decadence, or insanity. It is true that many historical "Wunderkinder" have been delicate, and have died young, and a few have become insane. But there is no evidence that mental precocity itself had any share in the causation of these events. Delicacy and disease may accompany, but are not caused by, precocity. There is abundant evidence that all the greatest men in the world have been drawn from the ranks of the precocious, and that their lives have not been below the average duration. In other words, genius and high intellectual ability are always precocious.

In regard to the general impression that active minds inhabit frail bodies, and that great men have always been unhealthy through life, Havelock Ellis (Study of British Genius) found that of 1,030 cases 110, or only about 10 per cent., were extremely delicate in infancy or childhood. Six were seven months' children or premature, 14 were very weak at birth and not expected to live.

Isaac Newton was so small at birth that "a quart mug would have held him." Fortunio Licetus, a sixth month fœtus, was only as long as the palm of one's hand at birth. Voltaire's nurse, for several

months after he was born, used to come daily to tell his mother that he was really dying. Goethe, at birth, was not expected to live. Gibbon, in infancy, was of feeble constitution, and his life was precarious. Victor Hugo's mother described him as "no longer than a knife" at birth. Demosthenes " was a weakling, and so tender in early childhood that his mother would not let him go much to school, nor did his masters dare to keep him hard at work." (Plutarch). Descartes was "a sickly young philosopher at eight." Albert von Haller, the pioneer of physiology, Wellington, Bacon, Locke, Swift, Watt, Canova, Alexander Hamilton, Schiller, Niebuhr, Byron, Johnson, William Pitt, Scott and Dickens were all delicate as children.

On the other hand Tennyson, Longfellow, Edison, Abraham Lincoln, Bismarck, Russell Lowell, Emerson, showed a natural and healthy development (Yoder). In some cases early delicacy was followed by exceptional physical health and vigour. Beethoven, Burke, Constable and Hobbes are examples (Havelock Ellis). Sometimes illness or feebleness of constitution has given an impulse to mental activity. Charles Dickens, for instance said that his ill-health in younger days inclined him to reading. Joseph Priestley believed that his early sickness was an advantage to him.

Enforced rest from illness has no doubt given the impulse to learning in naturally clever children, and hence the notion that "abnormal cleverness is a sign of ill-health." Galton says: "I do not deny that many men of extraordinary mental gifts have had weakened constitutions, but I deny them to be an essential or even usual accompaniment."

The fact that Cicero, Wagner, Darwin, Huxley, Carlyle suffered life-long martyrdom from chronic nervous dyspepsia does not prove that dyspepsia is essential to mental vigour. Keats, Schubert, Chopin, Mendelssohn, Spinoza, Novalis, Schiller, Thoreau, R. L. Stevenson, the Brontes," and many others, have died of tuberculosis, yet we are not justified in assuming that tuberculosis and genius or precocity are correlated.

Galton remarks on these points: "There is a prevalent belief that men of genius are naturally puny beings, all brain and no muscle; weak-sighted and generally of poor constitution. I think that most of my readers would be surprised at the stature and physical frames of the heroes of history who fill my pages, if they could be assembled together in a hall." He concludes, however, that "Among the gifted men there is a small percentage who have weak, excitable constitutions, who are destined to early death, but that the remainder consists of men likely to enjoy a vigorous old age." Yoder agrees with Galton that the idea that great men in childhood have been weaker, more sickly and inactive physically than other children, is erroneous.

Is precocity an indication of future insanity? According to alienists, this is so, and they have certainly two historical instances to support them in the cases of Caspar da Vega and Tasso, both of whom were sixteenth century Wunderkinder. Da Vega eventually became a victim to religious melancholia, and Tasso was insane at thirty.

Some men of genius have become addicted to alcoholism and drug-taking, like Poe, Burns, the Coleridges, De Quincy, Morland and Rembrandt, and therefore might be regarded as insane.

If eccentricity, waywardness and unconventionality are evidences of madness a large number of geniuses, such as Shelley and Charles Lamb, have been insane. But melancholy, delusions, narcomania and eccentricity do not occur exclusively in men of genius or of high ability who have been precocious. Granting the precocity of geniuses who have become insane, it does not follow that all precocious children are in danger of insanity. The alienist's experience is confined to those who do become insane.

Does precocity imply early decadence? It is commonly predicted of a precocious child that he " will go up like a rocket and come down like its stick." He has been compared to the " early riser, conceited all the forenoon of life, stupid and uninterest-

ing all the afternoon and evening."

But precocity no more implies early decay than early decease. Jastrow found that his specially precocious class reached the period of original production much more speedily than other great men, but that they did not achieve a truly great success before others. Furthermore, they reach the highest point of their development somewhat later than eminent men in general, namely, at the age of forty-seven, as against forty-five. In the case of Wunderkinder, the average age at production of their greatest work is 42.1.

Were precocity necessarily attended by prematurity, and therefore early decadence, all precocious children would die demented. A Goethe or a Thomas Young could not long survive his infancy. But although precocity does not imply early decay, it cannot be disputed that precocious children often do not fulfil the promise of their youthful days, and there is some ground for the popular belief that "clever children make dull men."

What are the causes of failure in the apparently precocious? It is impossible to say what proportion of precocious children meet with success in after life. A genius is known to the world by what he does. Unless he achieves something great the world does not know him as a genius, whereas we are all familiar with persons of seemingly transcendant mental gifts and abilities who never do anything at all but waste their lives.

Superficially, the intellectual failure and the genius have much in common. Each has versatility, but the genius finds his special bent and clings to it, whereas the failure flits from field to field, and may never specialise in any. Versatility in the one is but volatility in the other.

Genius may mistake its special bent at first, or it may be thwarted by design or circumstances. But the genius, if he does not find full scope for his powers in one direction immediately seeks another, and if thwarted or hampered invariably overrides all obstacles. Whereas the intellectual failure either mistakes his bent yet makes obstinate and futile attempts to follow it, or gives up the struggle in face of any opposition, even in lines in which he might excel.

Egoism, self-consciousness and introspection, pride and vanity are characteristics of certain types of genius, but these qualities without genius, are almost bound to lead to failure.

Mistaken bent. Considering the versatility of genius, it is not surprising that in some cases more than one line may be taken up before the final choice is made. I may give a few instances in point.

Lucian tells us, in his "Vision," that as a small boy he used to be punished at school for stealing the wax from his writing tablets in order to mould small figures of animals and men and women. His parents assumed therefore that he was destined to become a sculptor, and apprenticed him to his uncle, who happened to be one. The apprenticeship lasted one day. At his first attempt he broke a valuable plaque with the chisel. His uncle flew into a passion and beat the boy, who ran home bruised and weeping, declaring that his uncle treated him in this manner out of envy at his superior skill. That night he had a dream in which Culture and Statuary appeared and invited him to choose between them. Not altogether without bias, he favoured Culture, and hence we have his immortal Dialogues.

Galileo (1564-1642) as a youth was an excellent artist; then he thought of devoting himself to painting, but when he was seventeen he studied medicine, and at the University of Pisa he fell in love with mathematics. Billroth, the surgeon (1829-94), as a youth desired to devote himself to music for life. He felt himself to be "truly a child of music and the stage." Surgery was his destination, but he always retained his passion for his first love. His book, "Wer ist Musikalisch," is an elaborate study of musical psychology. Ruysdael, although showing remarkable artistic ability at fourteen, was a surgeon before he became an artist. Keats was an L.S.A., and Smollett a medical practitioner. Sir Wm. Herschel was educated as a musician.

John Locke was not only a metaphysician

but a capable physician, the friend of Sydenham. He diagnosed an hepatic abscess in Lord Shaftesbury, when others had failed to do so, and saved his life by operation. (See Lewes' " Life of John Locke and cf. Prof. Osler's " An Alabama Student and other Biographical Essays," Oxford, 1908). Oliver Goldsmith was a conspicuous failure as a doctor. Berlioz at first studied medicine. Two of our greatest modern etchers, Seymour Haden and Propert, were also members of the medical profession. Claude Bernard, before he was twenty-one, wrote a successful comedy and a five-act drama. He was dissuaded from literature as a profession by Girardin, then he took to medicine. Rabelais was first a monk, then physician to the Hotel Dieu, at Lyons. It has been stated that he began to compose his merry tales with a view to relieving his patients' monotony whilst enduring Bath cures.

Thwarted bent. The intellectus universalis usually meets with prompt appreciation in children, and seldom lacks encouragement, but the precocity of genius in special lines has often been discouraged or unseen. Handel's father sent all musical instruments out of the house to keep his child from playing. Bach's early compositions were destroyed by his elder brother in order to discourage him. Robert Schumann abandoned law for music against his parents' wish. Cellini's father, a musician, tried to make Benvenuto a flute player. Tycho Brahé was sent to study law at sixteen, but managed to conduct his astronomical pursuits after office hours. Rubens, who took to painting at thirteen, had to put up with the distress of his mother, who deemed him worthy of a higher calling.

Sir Joshua Reynold's father wished him to become a medical man, and rebuked him as a child for neglecting his lessons and taking pleasure only in drawing. Hogarth was considered very dull at his lessons, but embellished all his books with illustrations. John Hunter nearly became a cabinet maker. J. H. von Klaproth (1783-1855) became a distinguished Oriental scholar and linguist. His father, a scientific chemist, educated him to become one also, but at his examination, when about fifteen, he did so badly that the professor said to him, " Sir, you know nothing ! " to which he replied, " Excuse me, I know Chinese." He had learnt the language without any assistance.

Unrecognised bent. Some instances of supposed dulness in the early lives of great men may be due to their strongly-developed critical faculty which resents the manner in which subjects are presented to them.

Precocious critical faculty. Heine regarded Greek as the invention of the devil. "God knows what misery I suffered with it," he said. He hated French mêtres, and his teacher vowed he had no soul for poetry. He was " horribly bored " by the " odious, stiff, cut-and-dried tone " of his professors, having views of his own on the matter. Hegel was a poor scholar, and was stated to be " of middling industry and knowledge, and extremely deficient in philosophy." One cannot doubt that he brooded over his own obscure system, whilst criticising unfavourably that of others. Berlioz left the Paris Conservatoire of Music disgusted at the dry pedantry of his teachers, and struck out a new line for himself. Rossini's early dislike for music probably was caused by his musical parents, who tried to press his inclinations.

Precocity and originality of mind have sometimes been unappreciated and baffled by uncongenial tasks. Linnæus could not learn languages. Leigh Hunt could not be taught the multiplication table. Goldsmith's teacher thought him the dullest boy she had ever tried to instruct. Chatterton's mother regarded him as "little better than an absolute fool " at six-and-a-half. Humphrey Davy at school was described as " an idle boy with a gift for making verses, but with no aptitude for studies of a graver sort." Afterwards he considered it fortunate that he was left so much to himself. Huxley detested writing till past twenty, and complained that his teachers " cared as much for his intellectual and moral welfare as if they were

baby farmers." Byron was always bottom of his class as a school-boy. Sheridan was remarkable for nothing else but idleness and winning manners. He was not only slovenly in contruing, but unusually defective in Greek grammar. Darwin was considered at school as rather below the common standard in intellect. His father wounded his gentle nature by saying to him, "You care for nothing but shooting, dogs, and rat-catching, and you will be a disgrace to yourself and all your family." Honoré de Balzac was considered at eight years of age as the idlest, most callous boy in his division, and was caned and confined in the school dungeons in consequence. The Fathers of the Seminary knew nothing of his craving for reading; his dreamy mental states were regarded as pure laziness.

In contrast may be mentioned the wise treatment of Descartes by the Jesuit Fathers of La Flèche. Marking that his mind was "naturally disposed to meditation," they allowed him to be late in bed, excused him attendance at lectures, and relieved him of much routine work done in common with other boys. (cf. Carpio de Vega).

Similarly, the poet, Abraham Cowley (1618-67), could not be forced by his masters to the drudgery of learning grammar, so they excused him on the ground that his natural quickness made it needless. Such leniency in the ancient school of Westminster is only explained by the fact that Cowley escaped, by a bare year, the discipline of Busby. He failed to matriculate at Cambridge in 1636, but gained a scholarship at Trinity next year.

Instances might be multiplied in which eminent men, when children, have quietly and steadfastly followed their own line, refusing with dogged obstinacy and perseverence to conform to any stereotyped course of learning. They have often been branded as dunces and dullards, yet in reality have been more precocious than any.

Sometimes a fastidious hesitancy to admit that learning has been mastered may pass for stupidity. John Wesley's mother declared that she had to repeat a thing twenty time to her famous son, but after the twentieth time he never forgot. Wellington, "my dull boy, Arthur," as his mother called him, was similarly slow in grasping facts, and equally tenacious of them, and the same has been said of the late Duke of Devonshire.

Precocity of Reticence. There is such a thing as precocity of reticence which may simulate dulness in the eyes of unobservant teachers and parents. Silent children are often accounted stupid, but those who talk least often think most, and their thoughts may be worth more than pennies. Precocious reticence is often, especially in imaginative, philosophic and scientific minds, associated with dreamy mental states, inability to descend to the "trivial round and common task," and unsociableness. Precocious children of the reticent, dreamy type may share the fate of Balzac, and not the good fortune of Descartes and Cowley.

The habit of taciturnity and of restraining all outward show of emotion is common is nervous subjects, and may be taken to indicate dulness. Harriet Martineau was considered extremely stupid as a child owing to sheer nervousness, and to her habit of concealing the fears of imagination which haunted her.

A desire for solitude and unsociableness seems to be a common trait. Sometimes, desire for solitude proceeds from timidity and dread of noise in delicate children. Sometimes it is from proneness to indulge in reverie and day dreams, and in communings with nature. Johnson sauntered in the fields in childhood, dreaming and talking to himself rather than to his companion. Darwin, in a brown study, stepped over the city wall of Shrewsbury and nearly broke his neck. Wordsworth mused alone in the twilight glens, and Byron in the abbey cloisters. Shelley communed with the stars and moon.

George Sand had a secret hiding place in the woods, in which she erected an altar and performed thereon solemn strange rites, setting at liberty butterflies, lizards, green frogs and birds in the name of her

new deity Corambé. Sir Charles Mackintosh, at eleven, loved solitude, and used to dream that he was Emperor of Constantinople. The elder Coleridge wandered in the streets imagining himself Leander swimming the Hellespont, and as his spreading hands touched a passer-by, he narrowly escaped arrest as a pick-pocket. Hartley Coleridge, his son, was intensely sensitive, impatient of control, shy and awkward to excess, insignificant in personal appearance, and infirm of will. At school he never played, but passed his spare time reading, writing, dreaming to himself, and telling his dreams to others.

Wagner, in the fits of gloom and depression which seized him as a lad, would hide himself and cogitate alone for hours together. Some of these silent, solitary children have the faculty of conjuring hallucinations at will before their eyes. Jerome Cardan, sixteenth century physician, astrologist and mathematician, as a child amused himself by watching phantom figures of warriors, priests, animals, trees and flowers, etc., which seemed to pass in endless procession across his bed. Henry Morley, who wrote a life of Carden, refers to a similar habit of his own, and a modern instance, charmingly related, is found in Jules Breton's "Vie d'un artiste."

It is characteristic of such children that they always keep their visions to themselves. Aristotle said of the man who seeks solitude he is either a God or a beast. Some schoolmasters of the present day are in the habit of assuming the latter, and suspect any boy who is solitary, and muses, and will not join in games, of being addicted to secret vice. The principle "either play or work" saves the schoolmaster a great deal of trouble, but it is not applicable to all children alike.

The precocity of reticence, the critical instincts, the dreamy, mental states and desire for solitude in clever children may be mistaken for sloth and indolence, especially when interspersed with occasional flashes of ability. Some quietly and imperturbably follow their bent, and assert themselves, in spite of injudicious treatment. Tamer spirits give in, or are spurred to make superhuman efforts to excel in lines which do not suit them, and fail.

Genius is irrepressible. It is unnecessary to enlarge on the struggle against ill-health, poverty and want of education; the innumerable privations, disappointments, affronts, slights and unappreciation by the world which many a genius has had to meet.

True genius is irrepressible and triumphs over every obstacle. A Handel will always find a spinet in a garret; a Wilkie or a Canova his pencil; a Newton or a Ferguson his tools. A Wagner's life may be one long-drawn wail of neurasthenic misery; a Darwin may be incapable through illness of working more than an hour or two at a time, yet their creations are bound to see the light, although their travail may be one of sorrow and keen anguish. For the essence of genius is the impulse to create. Without the creative instinct many who share the intellect of genius are failures. Many again whose ability is undoubted and whose instinct to create is strong, have no staying power, no mastery of detail, no capacity for drudgery, even for short periods, and are prostrated by bitterness and chagrin when critics prove unkind.

These form the "brilliant wasters" of the community, of whom it is often said, "they could do anything if they only chose." In childhood their precocity is usually of the pseudo, or psychasthenic variety, which unfortunately is often mistaken for the true precocity which, as I have said, always characterises true genius and high intellectual endowment.

Psychasthenic Precocity. To many the conception of a precocious child is merely a picture of a small, pert and witty being, full of whims and fancies, querulous, exacting and peevish, depressed and lethargic by day, restless and excited by night. A spoilt, pampered and petted creature, whose shrewd sayings are repeated with admiration before his face, and whose little tricks of recitation, singing, etc., are paraded for the delectation

of all and sundry, who regard him secretly as an unmitigated nuisance.

Trüper ("Minor Mental Abnormalities in Children," *Child-Study Monthly,* 1898) says (in substance) of them (the nervously excitable type of morbid precocity), that "there is no lack of apparently precocious intelligence; it is not real, however, but due only to a fantastic and excitable imagination." Children of this type interrupt with all sorts of wise questions. They are restless as butterflies, peevish and stubborn. They are likely to show volitional defects. Commonly they are well gifted in language, and in general interested in words rather than things. Their weakness only comes to light when they are overloaded with subject matter of instruction.

"The matter," he says, "is complicated by the foolish pride of parents. Worst of all, the teacher accepts these qualities as symptoms of genius in language, philosophy, etc., and is likely to encourage the pupil to continue his interest in book knowledge and general instruction rather than adopt the far more sane method of restoring balance by the study of concrete things and by feeding the sense of reality."

Meyer (*Amer. J. of Psychology,* Oct., 1903) speaks of the morbidly precocious as being "prematurely and one-sidedly conscientious, and often of exalted religious and moral standards, and having a "furor" for abstract matters. They shun companions of their own age, and cling to those who are older and can better feed their insatiable curiosity. They are irritable, erotic, whimsical and hyper-sensitive. They are egotistical, subject to fantastic day-dreaming, and become too good for the world. They take more interest in words, books, and remote philosophical matters than in actual experience. (Quoted from Lewis M. Terman, *Amer. J. of Psy.*, April, 1905).

It is obvious that all these characteristics may be shared alike by the budding genius and by the intellectual ne'er-do-well. The problem will always be, how to deal effectively with each. Galton says: "A youth of ability and genius is almost independent of ordinary school education. He is omnivorous of intellectual work. The best care a teacher can take of him is to leave him alone, just directing a little here and there, and checking desultory tendencies."

Consideration of the many instances in which genius has shown itself intolerant of routine will lead us to endorse his views, so far as genius of the purely intellectual order is concerned. The intellectus universalis can rarely be exhausted by its own vitality. Genius, with its mainstays, steadfastness of purpose, zeal, self-reliance, ambition and impulse to create, may safely be left to itself. But the psychasthenic emotional type, which is usually not only bereft of these qualities but is swayed by timidity, self-consciousness, despondency, and dislike for any kind of mental or physical drudgery, and is often accompanied by egoism, vanity and hypersensitiveness, needs special consideration.

Precocious children of the psychasthenic type are as a rule unfitted for the ordinary routine of school life. They cannot adapt themselves to their surroundings. They require individual attention, which cannot be supplied in public institutions. I do not agree with Trüper that their intelligence is apparent, not real. Their intellectual powers are often high, and by judicious management and encouragement may be fostered.

Attempts made to enforce industry in uncongenial tasks, to cram the memory with elusive facts, to excite ambition by blame, and fear by prophecy of failure, may result in mental and physical breakdown. Their education should follow the lines for which they show most aptitude. Their reading should be guided, not forced. General information should be absorbed by degrees, not rubbed in "en masse."

A good memory is essential to eminence, and probably all truly great men possess it. Yet memory is of different kinds, visual, auditory, and associative. Some are extremely receptive of abstract ideas and theories, but cannot retain concrete facts, others retain the facts but cannot reason from them. The obviously clever child who yet finds difficulty in assimilat-

ing arbitrary facts, may be pressed and urged to do so until his mind is bankrupt; and then his precocity bears the blame. On the other hand, the glib fact reciter may be successful in examinations and regarded as brilliant, but belies his precocity by failing in after life.

Psychasthenic precocious children should be spared all exaggerated and one-sided teaching on religious, moral, and social questions. Their opinions on all such subjects are sure to be lacking in breadth of view, and are apt to become morbid obsessions. The moral fibre may be strengthened by sympathy and consideration. A word of praise and encouragement often does more good than torrents of blame. Above all they need a simple, healthy, open-air life. Freedom from artificial emotional stress is essential, but it should not be forgotten that boredom and ennui are as productive of neurasthenia and morbid mental states as a life of constant restlessness and social excitement.

I shall not indulge in the customary Jeremiads on the faults of modern methods of education in general. All systems have their advocates. The claims of liberal v. utilitarian education, formal v. subject matter studies; grammar v. no grammar; scientific v. literary training have all been extolled in turn and hotly contested. They are as far from being settled now as they were in the Middle Ages, because minds differ and no system is adapted for all alike, though each may be suitable for some. Any system which does not allow for individuality of mind, tastes and character, may be harmful.

Clever children who possess strong nervous endowment can accumulate knowledge with impunity. It is the psychasthenic variety which is most frequently brought to naught. Psychasthenics may be so innately, they are frequently the offspring and descendants of brilliant but neurotic parents and ancestors; they may develop neuroses in consequence of delicacy and illness, or of emotional strain and mismanagement.

If parents would only learn that brightness and ability are not unfavourable or morbid signs unless associated with marked nervous instability and hyperæsthesia; and if teachers would refrain from forcing on bright, clever, but neurotic children who show easily recognised signs of impending mental exhaustion, which may be counteracted if taken in time, the term precocity would lose much of its evil significance.

The precocious child is not necessarily a genius, but by careful management he may at least be prevented from becoming a failure. The points which I have tried to emphasise are: (1) That genius and high intellectual endowment are always precocious, although signs of precocity may not always be recognised; (2) that the neurotic temperament is inseparable from precocity, genius, and high intellectual capacity; (3) that the neurotic temperament may either make or mar success in accordance with the treatment which it receives.

Binet's Mental Tests; What they are, and what we can do with them. V. (*contd*).

By W. H. Winch, M.A.

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A Horse: "What pulls the carts along"-"To pull carts along"-"What pulls the carts along, and does a lot of work"-"What you ride on" (forty-eight per cent. of the seven-year-old children gave the foregoing answers)-"What 'gees up' and runs about"-"To run about"-"Who carries the men's luggage"-"A mare who pulls carts along and goes to the coal factory or the market"-"An animal with two ears, and two big eyes, and he eats chaff"-"An animal. He runs and pulls carts along, and has four legs"-"What pulls a fire-engine along."

These definitions of seven-year-old children, whilst in the main following the lines of those of younger children, show some notable advances towards classification and objectivity. In the definition of "fork" the word "thing" occurs more frequently, its definition as a "table-

thing" is extremely good, and the three descriptive definitions given towards the end of the list are not common until a much later age than seven. Precisely similar observations may be made with reference to the children's definitions of "table."

A mother is now often defined as a "lady"; the word "woman," which occurs once only, belongs to a later stage, as does also the classification "parent." Though the great bulk of the children, like the six-year-old boys and girls, consider their mothers only in relation to themselves, there are a few descriptive definitions with the personal reference omitted.

A mother is a "lady"; but a father is a "man"; "gentleman" is a very rare classification. It is interesting to note that the word "who" occurs for the first time as a "relative" term. A horse pulls carts; later on in school life the children make it clear that they are *our* carts, and that the horse works for us. There is an occasional classification of horse as an animal, and one attempt at description.

Even from these definitions alone the lines of definitional development are fairly clear; but I hope some day to present the results of work with some thousands of school children at later ages, and to pursue the matter in more detail.

Binet's Fifth Test for Six-year-old Children deals with the performance of three commissions given simultaneously. No better education can be given to children than that which enables them, under instruction, to take a useful part, according to their powers, in the corporate life of the school; but, of course, Binet's test commissions are not concerned with the school material. Binet's example is given as follows: The experimenter is to say to the child, "You see this key; put it on that chair, then shut the door, then you will see a box near the door, the box is on a chair: take the box and bring it to me." Little children who can quite well remember and perform three commissions *may* be confused merely by the multitude of words; so in our English exercises we shortened the instruction verbally thus: "Put this key on the table, then close the door, then bring that box to me." A second chair was not introduced; it might give rise to unnecessary confusion, both in the directions and their fulfilment.

One must be careful, Binet says, not to ask the child to do anything he would be afraid of doing, such as touching the experimenter's hat. Our English little ones are not usually so easily frightened, though they *might* not care to touch a gentleman's hat. Children are often able to remember to do two commissions, but not the third. Sometimes, says Binet, they will go out and shut the door behind them. Personally I can conceive that this proceeding in some circumstances is a sign of intelligence rather than of the reverse; but, doubtless, only with older children. Some will stand and think, knowing they have forgotten something. To pass the test all three commissions must be carried out without prompting.

Binet's results show that at four years of age scarcely a child can do the three commissions; at five years half of them can do it; but at six years all, or nearly all, succeed.

Our English children pass this test at an earlier age than the French. Even *at three years of age* thirty-two per cent. of our children can perform the three commissions one after the other in their proper order. *At four years* of age there is a great advance, and *at five years* practically every child succeeded in all three schools. I have placed this test, therefore, among the five-year-old group of tests, and not, as Binet does, in the six-year-old group.

Our *three-year-old children* who failed often did the first and second commissions, but forgot the third. Some who failed did all three commissions, but in an incorrect order. The others who failed looked at the experimenter, but made no movement whatever. Our *four-year-old children* who failed made, on the whole, the same errors as the three-year-old children, but sixteen per cent. of them went *outside* the door, shut it and did not return. The *five, six and seven-year-old children* were

quite successful; no six or seven-year-old child in any of the three schools failed.

BINET'S SIXTH TEST FOR SIX-YEAR-OLD CHILDREN requires them to know their age in years. Binet tells us that we are to say to the child, "How old are you?" Some children will not answer; but those who do answer generally give less than their age rather than more; for example, a child of six will sometimes say "Two." It is only at six years, he says, that the majority of French children know their age. This is not a question requiring birthdays to be given; these are not asked for; the child "passes" the test if he knows the correct year. Once again, our younger English children were superior to the French.

At three years of age sixteen per cent. of the English children tested were able to state the correct year. One child gave his age as "Four years," another said "Four-and-a-half years," another "Six years," and another "Three months." The remaining children who failed said, "I don't know."

At four years of age the number of correct answers increased to forty-four per cent. in the intermediate school, and the figures were slightly higher in the "very poor" school, and much higher in the well-situated school. It is probable that that there is a pedagogical factor operating, or more probably the "home environment" may account for the considerable difference in this case. In the intermediate school one child, in answer to the question, said, "Three months," another "Six years," another "Three-and-a-half years," another "Twelve months," and another "One month." The remainder of those who gave incorrect answers said "I don't know."

At five years of age over seventy per cent. knew their correct age. One boy who failed, gave his age as "Twenty," and, when further questioned, said "Twenty-four"; a girl said her age was "One year, six months"; and one boy said he was "Four." The remainder who failed to pass the test said "I don't know."

At six years of age there were practically no failures; but very few children mentioned anything but the year. Three or four, however, gave their ages more exactly, as, for example, "I am seven in April."

At seven years of age every child knew his age. Sixty per cent. gave the year only, namely, seven; twenty-eight per cent. said "I shall be eight next birthday." Other answers were: "Getting on for eight," "Seven-and-threequarters," and "Seven-and-a-half."

Further researches may show that, for English children, this is really a five-year-old test; but for the present, since the matter is doubtful, I have retained the test in the position indicated by Binet, namely, in the six-year-old group.

BINET'S SEVENTH TEST FOR SIX-YEAR-OLD CHILDREN deals with their early notions of time. Here is an aspect of their mental life which is very slow to develop. For a long time, he says, the child mixes up "yesterday" and "to-morrow." Still further, the young child does not know the distinction between "morning" and "afternoon." He then gives a word or two of pedagogical criticism which teachers will find interesting. Children are much less advanced and much less intelligent about time than is generally believed; he himself, he says, expected to find them more capable. Long before the age of six he would have supposed the child would know morning from afternoon, and which was which; it seems so easy.

Note then, he says, the absurdity of teaching historical biography and the principal movements of the sun to children of six (official regulations for the *les écoles maternelles*—infant schools—of Paris). Is it not an absurdity, he asks, to speak of national history to children who cannot yet distinguish morning from afternoon? Of course, as teachers well know, stories of the lives of national heroes may very well be told without requiring that these persons shall be correctly placed in order of time. Still, we cannot help feeling in very strong agreement with Binet's general contention, and English educationists may rea-

sonably feel a little jubilant that they do not commit this particular error. But we must not be too jubilant, for this sort of thing arises in all cases from the fundamental defect which prompts everywhere to inflated syllabuses, of which England (even in its public elementary schools during the last two decades) can show many excellent examples. She may even dispute the palm with America.

Let us go back to the experiment. Binet directs us to ask the child "Is it morning or afternoon?" Some children reply by chance; others simply say "Yes"; it is only at six that the distinction is generally known; but long before six the child knows whether he has had, or has not had, his "*déjeuner*" (his mid-day meal or dinner).

We found this reference to meal-times most useful, though there is no indication that Binet himself used it in any way. Children, like adults on holiday, punctuate their day by meal-times. When this experiment was carried out in our English schools the experimenter first asked "Is it morning or afternoon?" and then followed up this question with others, such as: "What is it when you have had your dinner?"; "What is it when you have your breakfast?" The child was considered to have passed the test when the experimenter was satisfied that the child's answers were not "chance" ones.

In this test once more the English children seemed, age for age, somewhat ahead of the French.

At three years of age twenty-four per cent. of our English children could distinguish "morning" from "afternoon." Those who could not do so were silent or named a day of the week, and that the wrong day.

At four years of age more than fifty per cent. (except in the "very poor" school, where the percentage fell to forty) answered satisfactorily. At this age no child kept silent. "Guess" answers had to be carefully eliminated; and many of those who failed named a day of the week, mostly incorrectly; for example, Monday would be called Friday.

At five years of age there was a great advance, and I think that for English children this test will be found, on further research, to belong to the five-year-old group of tests. Still, since the differences between the results in the three schools are considerable, I have for the present retained the test in the six-year-old group. But the failures, even at this age, hopelessly confused the morning with the afternoon, though two-thirds of them gave the correct day of the week.

At six years of age we have only one or two failures in the aggregate. There was, however, some hesitation among those who "passed."

At seven years of age there were no failures, and there was no hesitation. Many of the children smiled with a why-does-he-ask-silly-things-like-that air when asked "Is it morning or afternoon?" But they looked more thoughtful when asked, "What will it be just after you have had your breakfast to-morrow?" and other questions of that kind. But there were no actual failures.

As I said above, I have kept the test within the six-year-old group, though I am quite prepared to find later that, for English children, it is really a five-year-old test. Probably the solution of this difference may be found—as well as that of some other apparent differences between English and French children as measured by Binet's Tests (as indeed some of my own tests for older children indicate)—in the classification of the tests for different ages according to the "social character" of the school with which we are dealing. In "poor" schools, for example, this test may be a six-year-old "pass" test; in schools in fair or good neighbourhoods the normal children of five years will attempt it successfully. I shall deal next with Binet's Tests for Seven-year-old Children.

The Child-Study Society and the Constituent Societies.

The Annual Conference.—This will be held at Edinburgh on Thursday, Friday, and Saturday, June 4th, 5th, and 6th, of this year. The subject

for discussion is *Experimental Work in Education.* The programme for the meeting is as follows :—

THURSDAY, JUNE 4TH.—At 3.30 p.m., *Presidential Address,* by *Sir James Crichton-Browne,* in the Provincial Training College ; at 5 p.m., *A Plea for the Recognition of Instincts in Education,* by Dr. John Macpherson, in the Provincial Training College ; and at 8 p.m., *Reception* by The Lord Provost, Magistrates and Council, in the City Chambers.

FRIDAY, JUNE 5TH.—At 9.30 a.m., *Council Meeting* (Delegates only), in the Provincial Training College ; 12 noon, *Experiment in Relation to School Subjects and Methods,* by James Drever, B.A., B.Sc. ; from 9.30 to 12, and 2.15 to 4 p.m., *Visits to various places and institutions ;* from 4 to 6 p.m., *Garden Party in the Zoological Gardens, Corstaphine,* by invitation of the Ladies' Hospitality Committee and Lord Salvesen ; at 8 p.m., *Survey of the Recent Investigations and Criticisms on the Binet-Simon Tests,* by Miss K. L. Johnston, M.A., in the Lantern Room, Provincial Training College.

SATURDAY, JUNE 6TH.—At 10 a.m., *Mental Tests,* by Cyril Burt, M.A., in the Provincial Training College.

Information.—Members of Constituent Societies are entitled to attend the Conference, but must present their tickets to gain admission to the meetings and functions. Non-members will be charged 2s. 6d. for all lectures. Tickets may be had from Miss Maud Morin (Hon. Sec.), 5, Melville Street, Edinburgh. The Provincial Training College is situated in Canongate. Light refreshments may be obtained within the Training College.

Notices and News.

A Montessori Society Conference will be held at East Runton, July 25th to 28th, 1914. There will be papers, discussions, and demonstration classes, and a camp for visitors. Information can be had from the Conference Secretary, 12, Montagu Street, Portman Square, W.C.

An Appeal for Information on " Open-air education at Home and Abroad," *i.e.,* on open-air schools, playground and roof classes, school excursions, outdoor holiday courses, special schools for tuberculous children, etc., is made by the National League for Physical Education and Improvement, 4, Tavistock Square, London, W.C.

Home Education Congress.—The Fourth International will be held at Philadelphia, U.S.A., September 22nd to 29th, 1914. President Wilson is a patron, and the Officers of the Advisory Board are :—Professor M. V. O'Shea, *president ;* Professor W. C. Bagley, *vice-president ;* and Professor Will S. Monroe, *secretary.*

Reviews.

L'Enfance Anormale. April, 1914.

In the number for April, 1914, the " Causerie" by M. Grandvilliers insists upon the importance of making obligatory the present optional provision, in France, of special instruction for the mentally abnormal, which reminds us of the similar situation in England, soon, we hope, to be remedied. Dr. Robert Foy contributes the first part of a most able article on " Stammering," its origin, prevention, and treatment. Dr. Decroly, of Brussels, concludes his paper on " The Mental Examination of Abnormal Children," which will be read with interest by all who have used the Binet-Simon tests. In the notes of progress made in other countries, Mme. Lorentz mentions Mr. Winch's articles on the Binet-Simon tests in " an excellent English journal, *Child-Study.*"

Journal of Education. May, 1914.

An article in this issue by Dr. George R. Jeffrey, entitled, " Some Observations on the Use of the ' Reckoning Tests ' in School Children," is of considerable interest. Eighteen children, nine boys and nine girls, of eleven years of age were examined, these being divided into three groups of bright, average, and dull intellect. The test consisted in continuous addition of digits in pairs for a given period of time. It was repeated for five days in succession. The results showed (1) that in rate of reckoning the bright boys were better than the bright girls ; the average boys not so good as the average girls ; and that there is little difference between the dull boys and the dull girls. A marked increase in rate was evident on the fifth as compared with the first day. (2) That the brighter children attained their maximum speed before the fifth day, while the dull children showed more improvement at the end of the test, and are thus slower in demonstrating their best. With regard to sex differences in improbability, and in number of errors, the conclusions are that bright boys are usually better than bright girls, and average and dull girls are probably better than average and dull boys.

The writer recognises that the results, as the cases are so few, must be viewed with caution, but he is convinced that the test has considerable educational value, and that it may be utilised for the purpose of detecting and correcting errors due to false associations.

L'Intermédiaire des Educateurs. March and April, 1914.

In the March number there is an interesting little study of the sleep of children and adolescents. It is a study not merely of the number of hours sleep that children of various ages obtain, but also of the character of the sleep and manner of waking. Differences in this respect were observed to occur on different days of the week. It was found that there was a higher percentage of children whose sleep through Sunday night was less peaceful and profound than on Tuesday or Friday night ; and

that the awakening on Monday morning was spontaneous in a smaller number of children than on Wednesday or Saturday morning, the suggestion being that this might be due to the excitements of Sunday. Out of 450 children 246 slept alone; the rest slept two, three and four in one bed, while 41 only out of 450 slept with the window open. Unfortunately, no information is given as to the difference in the character of sleep and awakening due to these conditions. In the April number a study (based on the questionnaire method) of children's conception of a lie, and the reasons they give for lying, is described by Marie Dobie. Perhaps the most striking result and most suggestive to parents and teachers is that 72.9 per cent. of the children attribute lying to fear, and never more than 7.6 per cent. attribute it to one of seven other causes.

School and Life: A Brief Record of the Life and Work of Maria Elizabeth Findlay. By various writers. Pp. viii., 188. George Philip and Son. Price, 2s. 6d. net.

We think it is a pity that the contents of this book is concealed by its short title. The "brief record" is more of a well deserved eulogy, but there are three of Miss Findlay's essays, which show her powers and knowledge, as well as accounts of Mayland Hill School, which she established (for Mr. Fels) and conducted. In this school Miss Findlay endeavoured to work out a plan for co-ordinating school and life (hence the short title) and the accounts are well worth reading. Many will be glad to have this all too brief account of the life of a sincere, ardent, and devoted educationist.

Interpretations and Forecasts: A Study of Survivals and Tendencies in Contemporary Society. By Victor Branford, M.A. Pp. 424. Duckworth and Company Price, 7s. 6d. net.

The point of view of this book is suggested in the sentence: "It is the ethic of the school that with the unifying of thought should go on the organizing of citizenship, each process being needed to fertilize and make efficient the other"; and it aims at a systematic exposition of sociological views similar to those of Professor Geddes.

Problems of School Hygiene: being a Report of the First Conference of Scottish School Medical Officers. Edited by W. Leslie Mackenzie, M.A., LL.D., and Lewis D. Cruickshank, M.D., D.P.H. Pp. 112. William Hodge and Company. Price, 2s. 6d.

The conference was held on the 1st and 2nd of May, 1913. The report of its proceedings is well worth the attention of those interested in School Hygiene. Medical inspection, research, and treatment; physical education; and the medical examination of teachers and physical trainers are all considered.

Publications Received.—*The American Teacher* (U.S.A.); *Eugénique* (Paris); *The Parents' Review; The London Teacher; Kindergarten* (Berlin); *The Educational Times; The Journal of Education; Educational Review* (U.S.A.); *Le Jardin D'Enfants* (Paris); *L'Education Familiale* (Brussels); *School and Life* (St. Petersburg); *A Gyermek* (Budapest); *A Guide to the Chassevant Method of Musical Education*, by Marian P. Gibb (Heinemann, 3s. 6d. net); *Lessons on* (1) *The Kingdom of Judah, and* (2) *The Kingdom of Israel*, by C. C. Graveson, B.A. (Headley Bros., 1s. 6d. net each).

The Child-Study Society and the Constituent Societies.

Preliminary Programme of the Conference to be held in Edinburgh, June 4th, 5th, 6th, 1914:

June 4th, Thursday afternoon.—Civic reception in the City Chambers. Inaugural address by the President, Sir James Crichton-Browne.

Thursday evening.—Dr. Macpherson. Subject: "A Plea for the Recognition of the Instincts in Education."

June 5th, Friday morning.—9 a.m. Council meeting. 11 a.m. Mr. Drever. Subject: "Experiment in Relation to School Subjects and Methods."

Friday afternoon, 4 p.m.—Garden party or other entertainment.

Friday evening.—Miss Johnston. Subject: "Survey of the Recent Investigations and Criticisms on the Binet-Simon Tests."

Visits to special schools and Free Kindergartens on Friday, from 9 a.m. to 3 p.m. Visits to Mr. Drever's Pedagogical Laboratory Friday, from 9 a.m. to 1 p.m., and from 2 to 4 p.m. Also on Saturday, from 10 a.m. to 12.

June 6th, Saturday morning.—Mr. Cyril Burt. Subject: "Mental Tests."

The Conference will be held at the Edinburgh Provincial Training College (new building), Moray House, Canongate. The Pedagogical Laboratory is in this College. Among the special schools to be visited are "The Skin School" in Lanister Place, and "The Mentally Deficient Children's School" in Duncan Street. Hospitality is offered to visitors from a distance.

Child-Study.

The Journal of the Child-Study Society.

Vol. VII.—No. 6. OCTOBER, 1914.

Intensive Child Culture.

By Sir James Crichton-Browne, M.D., LL.D., D.SC., F.R.S.

Presidential Address delivered at the Annual Conference of the Child-Study Society at Edinburgh, June 5th, 1914.

The Child-Study Society could not, I feel sure, hold its annual meeting in any place with an atmosphere more congenial than that of Edinburgh, for child-study in its widest sense has always been the staple industry of this city. As childhood truly conceived extends to maturity or at least to adolescence, it includes the main part of education, and while this society concentrates its attention chiefly on the earlier stages of education spent in the cradle, the nursery, the kindergarten, and the preparatory school, it admits of no sharp line of demarcation, but concerns itself with everything that elucidates the growth and evolution of the mind and brain, and of the body which is to the flower and fruit of the brain, root, stem, and leaves. It draws from the vast storehouse of the educational experience of the past, illumination and valuable material and warnings too, and it hopes to supply to the education of the future, new guidance and useful auxiliary aid.

It is with education in its widest sense that Edinburgh is and always has been specially identified; as conspicuous as its castle rock has been its academic achievement. There are cities with universities more ancient and famous, there are cities with schools of higher social repute, there are cities where philanthropy has done more to smoothen the path of the rising generation, but there is no city in which education as a whole and in all its departments has been more zealously pursued, or has occupied a more prominent place in the municipal life. From its university, founded by James I., who was pedagogic, whatever else he was, through its colleges, academies, high schools, hospitals, down to its ragged schools so honourably associated with the name of Guthrie, it has always had nicely graded educational institutions, in which child-study has been carried on and applied according to the light of the period. It has been a city of education, and its seminaries not less than its romantic history have given it world-wide renown.

Phrenology and the Evolution of Child-Study. It is appropriate, having regard to its educational pre-eminence and activities, that the Child-Study Society should have a branch in Edinburgh, and should come here to reinforce its energies by an annual meeting. But on other and more restricted grounds it is, it seems to me, appropriate that the Child-Study Society should assemble here, for it was in Edinburgh that child-study in its more special sense, and pursued by special methods, had its beginning! It was, I believe, the Phrenological School of Edinburgh, inspired by Spurzheim and under the guidance of Combe, that in the first quarter of last century insisted for the first time clearly on the importance of the observation of the order in which the different powers of the mind are developed in the different stages of infancy and childhood, so that training might be adapted to their relative maturity.

However erroneous phrenology may have been in its cranial cartology, there can be no question that it did an incalculable service by promoting the study of the anatomy and physiology of the brain. It has been the most influential factor in the development of the now accepted doc-

trine of cerebral localization, and it has supplied the people, to whom the language of the philosophers was unintelligible shibboleth, with a system of mental science which, although arbitrary and faulty in many respects, has proved of much practical utility. Especially valuable from the workaday world point of view was the emphasis laid by the phrenologists on those instincts or propensities which lie at the basis of all human activity and supply the driving power by which all our actions, good or bad, are initiated and carried on, which answer to stimulation and are modified by experience at the outset of life, and which, when disordered, as shown recently in an admirable popular address by the President of the Edinburgh Child-Study Society, Dr. Macpherson, play so large a part in the causation and symptomatology of insanity.

The phrenological classification of these instincts or propensities seems to me more comprehensive and correct than that which is most recent and which we owe to Professor McDougall, of Oxford, even although Professor McDougall has evidently profited by phrenological pioneering. It was not, however, by its definition and examination of the mainsprings of human and animal action in alimentativeness and love of life, in amativeness, in philoprogenitiveness, in combativeness, in destructiveness, in acquisitiveness, in love of approbation and in self-conceit—pregnant with practical suggestions though its studies under each of these headings was—that phrenology did its most signal service to education, but by insisting on the principle that to raise any of our human mental powers into free and healthful action, the one sure and successful way is to bring it within the immediate influence of the objects to which it is specially related. If we wish to train the sense of sight to quicker perception, the phrenologists urged, we must employ the eye in the careful and rapid scrutiny of surrounding objects, of colours, magnitude and distances, if we wish to train the sense of hearing to a nicer discrimination of sounds, we must exercise the ear in listening to and distinguishing them, and our success, they maintained, will be in proportion to the degree in which infants have received from Nature the endowment of the sense, and to the perseverance and judgment with which we pursue its cultivation.

Precisely in the same way, they argued, if in our endeavour to give improved action to the internal sense of justice, we merely address to the intellect the precept "Be just," we shall succeed no better than we should do in trying to improve vision by the employment of the ear in discriminating sound. To cultivate feelings of pity and devotion it is not enough to address the intellect by eulogiums on their excellence, which can only appeal to the reason. We must also directly address the feelings themselves by showing sympathy and respect and by bringing them into contact with concrete cases of suffering which is ever too abundant around us. If the natural stimulus to the feelings be presented, the child will have no choice in the matter. The feeling will start into activity precisely as vision does when the eye is penetrated by rays of light. As we cannot by an effort of the will cease to see and hear while light and sound reach the eye and ear, so it is impossible to prevent the natural feelings from arising when their appropriate objects are presented to them.

The phrenologists led the way in the crusade against mere bookish and memorizing education, and in their writings are to be found anticipations of Herbert Spencer and of the best part of the systems with which are now associated with the names of Pestalozzi, Froebel and Montessori. They brought simplicity, practicability and sound common sense to bear on problems which before their time had been wrapped up in archaic and narrow tradition, and it is refreshing to-day to turn from neo-mysticism and vague and dubious logomachies to the clear and intelligible expositions of the "doctor philosophers" of the nineteenth century, as they have been somewhat contemptuously termed, who took their firm stand on an unfailing correspondence between consciousness and cerebral states.

The Work of George and Andrew Combe. In the lectures on "Popular Education," delivered by Mr. George Combe in Edinburgh in 1833, are to be found calm and rational discussions of most of the educational questions that agitate us at the present time, secular and religious education, sex education, science education, technical education, and handcraft; and even of the burning question of compulsory Greek. With reference to the last-named question, I am constrained to quote a passage from a letter from Sir Robert Christison to Mr. George Combe evoked by these lectures, which, written nearly a century ago, puts, I think, admirably, the conclusion to which recent controversy conducts. "My opinion regarding Greek," said Sir Robert, "shortly is that it is a most desirable branch of literature for imparting general knowledge and cultivation to the mind; but for direct professional or practical purposes is of so little consequence, both in itself and likewise as compared with modern languages and the exact sciences, that, considering the great augmentation of these branches of study in these days, the pursuit of it as a compulsory measure is a mere waste of time and labour."

But it is in the writings not of Mr. George Combe, but of his gifted brother Dr. Andrew Combe, that the outcome of phrenology in relation to child-study is most fully set forth, and as regards his work on "The Management of Infancy, Physiological and Moral," published in 1840, and in a later edition edited by Sir James Clark, and dedicated by permission to Queen Victoria, I do not hesitate to say that it will be found highly edifying by every student of child-study at the present day. Its teachings have been supplemented and in a few points corrected by modern physiological and medical discovery, but in the main they are as sound and authoritative as ever to-day. They constitute a compendium and manual of child-culture, and convey with admirable brevity and directness, information on hereditary and maternal influences on the constitution of the child at birth and on the gradual opening of its mental and moral powers; with instructions, quite trustworthy at this hour, on the management of the infant at birth and the care of its eyes, and on nursing, feeding, cleanliness, exercise and sleep, through the different stages of its subsequent growth. The book is, I understand, out of print, but a new edition of it, carefully edited and brought up to date, would be a valuable addition to our child-study library.

The phrenology of the past which first made the physiological study of mental science popular, had a powerful influence in rationalizing education and so was found useful by many teachers and led to many new departures, and the new phrenology, which is now engaging attention and which is founded on experimental investigation, cannot fail to affect profoundly the education of the future, and to enlarge our notions of child-study.

Brain Structure and Brain Function. There is, as the phrenologists affirmed, localization of function in the brain, and there is, as they also maintained, an orderly evolution of the several functional areas included in it. Certain parts of the brain and nervous system are prepared for functional activity before others, and as regards some, we have been enabled by histological research and pathological observation to determine the sequence of their emergence into operative being, and thus have obtained a clue to some of the earlier stages of mental evolution.

The nerve fibres which carry sensory impressions to the brain and those which carry motor mandates from it to the muscles, are composed of an axis cylinder (a thin transparent thread which is the conductor) and of a myelinated sheath of white substance, which insulates the axis cylinder or conducting thread, just as a telegraph wire is insulated by some non-conducting material to prevent leakage of electricity. Until the nerve fibres are myelinated or enclosed in their insulating sheaths they are not prepared for function or ready to conduct nerve currents, and it has now become possible, by means of chemical re-agents, which do not affect the

axis cylinder or conducting thread, but stain the insulating sheath a deep purple, to trace out the order in which certain regions of the brain are brought into functional fitness.

By means of thin slices of the brains of new-born babies and of infants of different ages, submitted to staining, it has been shown that while the stem of the brain and the large masses at its base which subserve respiration, circulation, and the essential functions of animal life, are fully myelinated at birth, other and higher brain systems concerned with instinctive emotional and intellectual powers are only gradually and at later periods furnished with their sheaths and mobilized.

The first to put on the purple are those ingoing sensory tracts which convey impressions from the skin, the muscles, the nose, the mouth, the ear, the eye, to those parts of the brain which are demonstrably the centres for special sense functions, and it is not until the third month of extra uterine life that the outgoing nerve tracts show by their staining that they are capable of carrying without spillage the impulses that initiate voluntary movements. The earliest part of the brain cortex to become myelinated in mammals is that connected with the sense of smell, which is in them predominant, while in birds it is the part connected with the sense of sight, which is in them of primary necessity.

But besides ingoing and outgoing fibres and sensory and motor areas in the brain, there are large areas of it not sensory or motor, which are called association centres, which have complex connections and serve to mediate the higher psychical activities and maintain what Bergson calls the continuity of movement of the inner life. They constitute the anatomical substrata of the intellectual emotional and voluntary life. These terminal or central brain zones may be regarded as huge accumulators which retain an indelible record of every sensation experienced, and can, under suitable conditions, reproduce these simply or compounded.

They are commutators also, for they can regulate the direction in which sensations are joined or fused; and generators, they are also the theatre of the originating or driving power of the mind. The principle of association of ideas alone is not adequate to account for all states of consciousness or mental processes. The mind is capable of giving birth to new ideas, and has the power to perform acts of consciousness, and the physical processes in which they are projected are indispensable instruments of knowledge and language as well as of the emotions and will.

Flechsig, the principal explorer in this department, has distinguished thirty-six areas in the cortex of the brain in which myelinization of the fibres occurs separately, and in which therefore, by inference, different physiological activities are mediated, and by a curious coincidence the number of organs in which the phrenologists localised the mental faculties was thirty-five. Further studies of myelinization in man and animals will doubtless prove highly instructive, but can only carry us a certain way in our investigation of mental evolution, for that goes on long after myelinization has been completed, and is associated with changes in the grey matter or covering mantle of the brain, in which are lodged the nerve cells or units, little specks of protoplasm containing a nucleus and mucleolus and giving out delicate protoplasmic prolongations or branches.

A fully developed nerve cell has been compared to "a spider seated in the centre of a web," which is an outgrowth of its own substance. Some of the fibres of the web are continued into nerves, and thus extend to the remotest tissues of the body. But others are continuous with the web-fibres of other brain spiders. The system might be compared with a very intricate system of telephone exchanges, each exchange supplying a certain district near at hand, and each linked with a number of other exchanges, and with a trunk system.

The neurons or independent nerve units which it has been computed are in the average human brain six hundred millions in number (they may be hundreds of mil-

lions, more or less, for such computations are always vague and illusory) do not breed and multiply, for they are rudimentarily all there at birth, but they grow, establish relation with their neighbours, and assume special characters. The brain of the infant at birth weighs 380 grm., that of the adult man weighs 1,430, so that the organ quadruples its weight during post-natal development. The number of nerve cells may be regarded as the index of natural endowment, but their growth and the inter-communications they establish are no doubt largely influenced by education and environment.

Much laborious investigation is still called for into the thickness and number of strata or laminæ, the calibre of the fibres, and the shape of the cells of the cortex in different regions of the brain, but already certain structural differences in different regions have been made out. Thus it has been shown that there are characteristic differences in the cells and layers in the sensory and motor areas, and in the centres for vision and hearing. A typical structure has been described in the frontal lobe, which plays a part of such great importance in the higher or more general processes of association. It is the last region of the cortex to be evolved. In mental decadence or dementia it is the first region to undergo dissolution, and in amentia or idiocy it is undeveloped.

The nerve cells in correspondence with the growth of the body undergo progressive differentiation, and while like other cells in which differentiation is carried to the highest extreme they do not multiply, they go on to an age that is indefinite, and that probably varies greatly in different animals, perfecting their structure and extending their connections. And as they do this, they want more and more room, and so the grey matter or cortex of the brain which is their matrix has to expand and increase its superficial area, in order to accommodate them. This it does by plaiting itself in folds.

At first smooth on its surface, as in the fœtus and lower mammals, it becomes as wrinkled as a walnut in the higher mammals and in the adult man. The foldings, or convolutions, as they are called, on the surface of the brain were at one time supposed to be mere fortuitous and irregular crumplings, but, thanks to a series of observations in which Gratiolet and Sir William Turner, now Principal, then Professor of Anatomy in the University of Edinburgh, took a foremost part, we now know that they are arranged on a definite plan, always the same in its main features, but infinitely varied in its details in each individual. We can identify the convolutions, and it has become clear that the fissures between them indicate the boundaries of regions differing from one another in structure and function. The convolutions represent a plurality of organs with a quasi-independence, not completely separated, but intimately associated with one another in their functional activity. The size of the different convolutions, which cannot be in any way gauged through the skull, is no doubt the measure of their functional power (another phrenological principle being thus vindicated), and could we read aright their relative development we should have a new key to character and capacity.

A study of the convolutions in the lower animals, and in human beings, healthy or mentally defective and diseased, will no doubt ultimately furnish valuable information; but I cannot think that a study of their hereditary resemblances in persons of the same family will yield results in any degree commensurate with the immense labour it must entail. Dr. Schuster has recently undertaken such a study in the case of a pair of brothers and of a mother and daughter who were insane, and has described points of similarity, not however at all distinctive. As much might have been anticipated.

The features of the face, as we all know, and as every portrait gallery attests, exhibit family traits running down through many generations, and it may well be that the features of the brain, of which those of the face are a dim reflex, are also stamped with some ancestral characteristics. But considering the enormous diffi-

culty of obtaining trustworthy material for such an investigation, the enormous length of time over which it must extend if it is to prove conclusive, and the enormous complexity of the hereditary mixture, I question whether it could ever form a basis for measuring the amount of correlation between relatives of different degrees with regard to their cerebral and mental characters or indicate whether the hereditary transmission is Mendelian or otherwise.

Much more urgent and significant, it seems to me, is the study of the order of appearance of the convolutions and fissures on the surface of the brain in the young animal and in the young human being, and the correlation of their appearance with first functional manifestations. There is much to be learnt from what Max Muller somewhat contemptuously called "menagerie psychology." In the lower animals, and especially in the group of primates, there is a conspicuous correspondence between intelligence and brain wrinkling.

From the lowest of primates, which are smooth brained, up through cebus, macaque, etc., to chimpanzee, there is a steady increase in the number of convolutions and fissures, and a steady and parallel increase in mental energy, and (crossing the gulf between animal and human, and a big gulf from the fœtus, which is smooth-brained up to the seventh year of life at any rate), when the brain has apparently reached its full size, perhaps much later, there is an increase of convolutions and fissures, and a parallel increase in mental energy. It may be said definitely that at least inside the great group of mammals, the length of the period of youth increases with the size and complexity of the brain.

The period of youth is the period of brain growth, and the important point to note in connection with brain growth is that it is gradually diminishing in quantity as life goes on. At first very rapid, it steadily slows down. The convolutional eruption in the fœtus is prodigious, in the baby luxuriant, in the child moderate, and in the adolescent imperceptible. And the same is it with psychological development; that is a steadily diminishing quantity as life goes on. It has been truly said that the first moment of existence is the most instructive of any, and that the older we grow the less do we learn.

Binet's Mental Tests; What they are, and what we can do with them. VI.

By W. H. Winch, M.A.

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Binet's First Test for Seven-year-old Children deals with a child's capacity to perceive omissions in the drawings of well-known figures. Binet tells us to show four drawings, three of them drawings of person's heads and one of a full-length female figure. The first of the drawings is a profile outline of a woman's head from which the eye is omitted; another is a drawing of a man's head from which the mouth is omitted; and the third is a drawing of the head of a woman from which the nose is omitted. The last drawing is an outline of a fully dressed figure of a woman with both arms omitted. These Binet drawings, modified in a few particulars which the experience of their use with English children dictated, are given on my *Form for Testing Backward Children*, published by Ralph Holland, Temple Chambers, London.

The experimenter is to show these drawings, one at a time, and to say to the child, "What is missing in this figure?" These were Binet's words, but in our English experiments we modified them, and asked instead, "What is left out in this drawing?" Binet's "pass" standard requires three correct answers out of four. He found very few passes at five years, at six he found two-thirds of his French children were in error, but at seven years of age the great majority of them passed. I retained Binet's "pass" standard, but found our English children much superior to the French in this test, a superiority which was strongly and definitely marked

in all three schools in which our tests were carried out, and in the children of all ages tested. Let me analyse the English results in more detail: the figures given are, as usual, except when otherwise expressly stipulated, from the results of the school intermediate in character.

At the age of four (we did not present this test to three-year-old children), no less than fifty per cent. of our children passed. The omissions of the arms and mouth presented the greatest difficulty. But "eye" and "nose" were not always seen to be lacking. One child said, "A little tiny mark is left out," meaning the line for the "nose" in figure 3. Another said, "There's a little dot left out," meaning the "eye" in figure 1. Another said, "There's only one eye," pointing to Binet's mark for the eyebrow which I have omitted in my Form. The reader will remember that many young children will demand *two* eyes on a profile drawing, because the person *has got* two eyes. Another child said, "He hasn't got any hair on his face": this remark applied to the drawing of the man's face with the mouth omitted.

At the age of five, about ninety per cent. of our English children passed the test. But there was a good deal of hesitation, and some answering that was a little beside the mark, which called for patience and persistence on the part of the experimenter. It was seen to be important not to show the full length figure first (figure 4), since, when this was done and the heads presented subsequently, such remarks as the following were made: "There is no body"; "There is no neck"; "There are no feet." Moreover, we must not forget that our drawings are not very satisfactory from a young child's standpoint; he likes the teeth showing; he sometimes wishes for very obvious "lips," and rather strongly objects to profile drawings: he likes to see two eyes.

I have put a little more "lip" in my modified drawings, but I did not turn them into full-face pictures, since, with somewhat older children, the demand for what a profile drawing cannot show is a good test of poor mental development. Some of the children made remarks as follow: "There are no lips"; "There are no teeth"; "There's only one eye"; "The lady is shutting her eye"; "She's got a wrong eye." This puzzled me a little at first, until I found that the child referred to Binet's eyebrow (which I have subsequently left out) in figure 1. The child was required to note the omission of the eye itself; the eyebrow confused him.

A very common remark was "The hands are left out." Rather more subtle observers noted that the woman "Hasn't got any red on her cheeks"; "Hasn't got any colour," and one child, referring to Binet's figure 2, said, "Some of his hair is gone." It certainly looks like it, so I have given my figure 2 a more luxurious crop. Sometimes, though, the omission of eyes and nose seemed easier to detect than the loss of arms and mouth; a child rarely would manage the latter and not the former, and one five-year-old child could find no omission at all except that of the mouth in figure 3. On the other hand, another five-year-old child (in the "very poor" school) could not perceive the omission of the mouth, though he had no difficulty in finding out the other omissions.

At the age of six, when all our children except one or two in the "very poor" school could easily pass the test, it made no difference to the readiness and accuracy of the answers which figure was presented to the child first; all the required omissions were pointed out without hesitation. Though it must be admitted that, when the drawing of the full-length figure was shown, it was quite common for the children to say "The hands are left out," but to say nothing about the omission of the "arms."

At the age of seven, every child in all three schools passed the test easily; in our intermediate school the experimenter's notes, taken at the time, read "No hesitation in a single case, and the word "arms," not "hands," was used on every occasion to describe the omission in figure 4.

Reviewing the whole evidence, I have no hesitation in placing this test among the five-year-old group for English chil-

dren. Binet, it will be remembered, places it among his Seven-year Tests.

Binet's Second Test for Seven-year-old Children deals with their knowledge of Number. He gives the following directions to the experimenter: "Say to the child: 1st, 'How many fingers have you on your right hand?' 2nd, 'How many fingers have you on your left hand?' 3rd, 'How many fingers have you altogether on both hands?' To pass the test satisfactorily the child must not hesitate, he must not count, and he must answer all three questions correctly."

Children often answer, Binet says, by saying that there are four fingers on the right hand, five on the left, and six on both, or five on the right, five on the left, and five on both. He states that only half of the French children at six years of age could pass the test, but that at seven the great majority succeed. In carrying out this test with English children the experimenter found it advisable to hold both the child's hands lightly until the three questions were answered. This was one way of preventing the child from counting his fingers.

I can say at once that English children were in advance of the French in this test; a more detailed analysis follows:

At four years of age, sixteen per cent. of English children were able to give correct answers to all three questions. Some of those who failed to do so just guessed, but it was by no means uncommon for them to say five fingers for the right hand, five for the left, and six altogether; or four for the right hand, four for the left, and five altogether. It will be remembered that Binet obtained similar answers from the French children.

At five years of age, forty-eight per cent. of our children gave correct answers. One girl who said there were six fingers on each hand, gave the total number as ten. Many children, who said quite correctly that there were five fingers on each hand, gave the totals variously as six, eight, or nine; the erroneous total given most frequently was six. No total lower than six was given by any child of this age. Some children said they had four fingers on each hand. The experimenter, thinking that, possibly, the two thumbs were not included, asked these children whether they had not left out their thumbs. Then the three regulation questions were asked again, but in all cases the children adhered to their previous answers.

At six years of age, over ninety per cent. of our children passed the test (in the well-placed school one hundred per cent. were successful). A girl, who failed, said there were five fingers on the right hand, six on the left, and ten altogether; and a backward boy said there were six fingers on each hand, and six altogether.

At seven years of age, no English child failed to pass. Every child, in all three schools tested, was ready at once with accurate answers. In view of the superiority of the English to the French children, this test has been placed in my scheme amongst the six-year-old group of exercises, and not amongst those of seven, as Binet places it.

The question may very fairly be raised whether this test is not too largely concerned with school instruction, and that, too, not in the most satisfactory way. Children who are taught to use their fingers in counting (by no means a bad method with very young children, though it should not be wholly relied on) will naturally answer, it is said, much better than children who do not. A better test, used by me in some of my recent work, involves the presentation of a small group or groups of things not previously used by the children, answers being required without counting, as in this test; but for the present I confine myself to Binet's Tests and my modifications of them. I do not purpose just now to describe my own tests for mental ability, except in so far as they are modifications of Binet's.

Binet's Third Test for Seven-year-old Children deals with the child's power to copy a short phrase in script characters. This is undoubtedly a test in which the instruction given at school plays a part; but it is *not* a test of handwriting. Binet's phrase is "The little Paul." He

directs the experimenter to place this before the child and ask him to copy it on paper with pen and ink. But I said it was not a test of handwriting. It certainly appears to be so at first sight, but the "pass" standard is such that a capable child can succeed, even though its instruction has been of the most meagre character. For all that is required is that the writing shall be understandable to a person who has not seen the copy, and that the child shall have made some attempt at the capital letters in the first and third words. And it is not necessary that the words shall be spelt correctly.

With English children we used the words "The little Jack," since the word "Paul" is very unfamiliar to them. One further precaution was adopted: the model to be copied was in all cases written in the style of writing taught in the school in which the experiments were being carried out.

English children can certainly copy a written phrase at an earlier age than seven years, but doubtless more exact information as to what our children did would be acceptable to English teachers.

At four years of age no child in any of the three schools was able to make a copy of these three words. The majority of the children could not manage to use the pen at all. A few attempted to make the first two letters, but, of course, their attempts were unrecognisable as letters.

At five years of age (I am quoting the figures for the school intermediate in character), thirty-six per cent. succeeded in making a recognisable copy of the phrase (the number was higher in the well-placed school). But with the exception of two or three children who wrote fairly well, the letters were of all sizes and spaced most irregularly. The control of the pen gave great difficulty, and the peculiar characteristics of the "nib" evidently needed a good deal of learning. Many of the children merely drew a succession of irregular curves.

At six years of age, upwards of eighty per cent. of our English children succeeded. A very great advance was shown on the work of the previous age. The pen was more manageable and there was considerable accuracy, both as to size and spacing.

At seven years of age, no child in any of the schools failed to make a copy good enough to reach Binet's standard. Evidently for English children the test, if we use it at all, is suitable for those of *six* years of age, not for those of seven; for practically all our children of seven, intelligent and otherwise, can pass the test. I am well aware that it is often stated that the power accurately to copy writing is frequently, if not invariably, found amongst very backward children. It is quite true that some intelligent persons, adults as well as children, write badly; sometimes because they have not been taught to write, and sometimes because the popular impression that "bad writing" amongst the educated implies a highly intellectual mind invites us to compete for that distinction.

But the regularity of the development in this capacity from age to age shows, at least so far as young children are concerned, that we may quite well take ability in this direction as a sign, not, perhaps, of intellectuality, but of mental advance. I do not know how it is that our children are a year in advance of the French. They are certainly, as I shall show later, *not* in advance in their capacity to read; they are, in fact, definitely behind the French children; but in this exercise of mechanical dexterity they are ahead.

One word of caution: we cannot tell from these tests just when to begin to teach that form of drawing which issues finally in handwriting. That is a much more difficult matter, a question of experimental Pedagogy rather than of Psychology.

Binet's Fourth Test for Seven-year-old Children is concerned with observation, and to some extent with draughtsmanship. He tells us how he came to use this test in schools. He had found, working among adult imbeciles, that some of them who could quite well copy a square could not copy a *losange* (a rhombus or square standing on one of its right angles: the

figure actually used by me is shown in Test 25 of my Form previously referred to). He expresses surprise that this should be the case, for the two figures have many points in common. The slope of the lines is, of course, one great difficulty.

I am quite well aware that many English teachers will wonder why we bother about little things like this. Their children, they will say, are expected to draw practically anything at sight, preferably something solid, not little things like squares and diamonds. Well, the results of these tests in simple drawings will surely reduce our expectations of what young children may reasonably be expected to draw. And I ask only one question of all teachers who favour the present method (or absence of method): Are their pupils learning to draw?

But I must get back to Binet; and I crave the reader's indulgence for digression. Binet's children use pen and ink; he insists on that. He tells us that his five-year-old children can draw a square —the reader is asked to call to mind what the "pass" standard was. But it is not until seven years of age that the French children can draw a satisfactory *losange*, and even at that age about twenty per cent. fail. At six years of age half the French children, and half only, can draw it well enough to pass.

At this juncture I am going to ask the English teacher to take my drawing; to show it to the child and ask him to copy the figure. It had best be done with one or two children at a time: in my own experiments each child was taken separately; but the test can, if time presses, be taken with a whole class at once. Then I ask the teacher to "pass" every child who draws a figure with four distinct slanting sides, if also the angles at the sides are roughly equal and the top and bottom angles are roughly equal. Then let him arrange their papers in "years," not classes, and compare his results with mine.

Among the modifications which I have made in Binet's Tests, there is none that has been more cordially approved of among English teachers than the substitution of pencil for pen and ink in this test; and in my Scheme for Testing Backward Children I require the drawings to be made in pencil. I argued the whole case in these articles when I dealt with the drawing of the square, and I do not purpose saying any more about it now. Still, in order that my results might properly compare with Binet's, in two of my three schools ink was used, not pencil. So that the teacher can, if she wishes to get results for comparative purposes, try her pupils with ink also.

At four years of age only four per cent. of our English children did drawings which could be classed as satisfactory. A few made a drawing like a square, resting on one side, not standing on edge; a few omitted one side altogether and drew a shape like a triangle, and others drew shapes which were quite irregular.

At five years of age the number of satisfactory drawings increased to forty per cent. One boy, when he had drawn the shape, twisted it round and said: "If I turn this round like that it comes the same as the other one" (referring to the square which he had drawn a few days before).

The upper left hand line is often drawn approximately at the proper obliquity, but the upper right hand oblique line is often drawn almost horizontally by the same children. Every child of five drew four fairly distinct lines of some kind somehow; and *all* of them began the drawing with the upper left oblique line, and *all* of them drew the upper right oblique line *second*. But the order of drawing the two remaining lines varied with different children. "What's the use," the teacher may ask, "of watching little things like these?" Just this: by watching the child we often find out (not always) the best method of teaching. And sometimes we find that the spontaneous method of attack, as I rather suspect it does in this case, brings difficulties later on. But let each teacher try for herself.

The percentage of passes among the five-year-old boys and girls of the well-situated school (the children drew with

ink, be it remembered) rose to fifty-five. In the school in a very poor neighbourhood, where the pupils drew with pencil, the percentage of passes was also fifty-five.

At the age of six years, eighty per cent. drew the figure satisfactorily. With one or two exceptions, all the children of this age who succeeded with the "square" standing on one side, succeeded also with the figure in this position. The following drawings show the methods adopted. Half the children drew the figure as in Fig. 1.

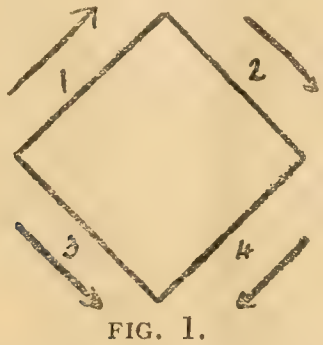

FIG. 1.

This is by far the most usual procedure for six-year-old children. They drew the line marked 1 upwards; then the line marked 2 downwards; began again with line 3, drawing it downwards, and finished by drawing line 4 downwards. Two or three of them drew the figure as in Fig. 2,

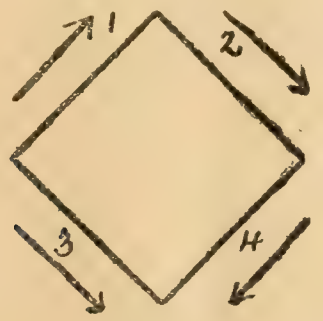

FIG. 2.

and one child, and one only, drew right round without leaving off.

At seven years of age the percentage of satisfactory drawings rose to ninety. The improvement on the work of the six-year-old children is not great; but one outstanding fact of interest deserves to be recounted. *Every* seven-year-old child drew *every* line in a *downward* direction, and the order of drawing the lines (with one or two exceptions) followed two distinct patterns. Half the children drew the figure as in Fig. 3, and the great majority

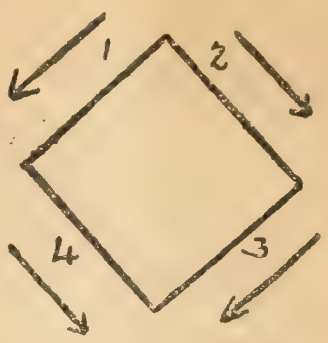

FIG. 3.

of the remainder drew it as in Fig. 4.

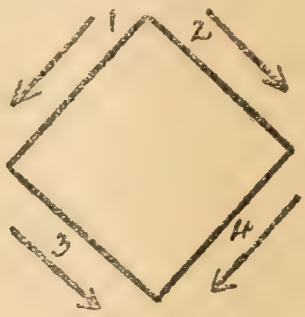

FIG. 4.

Not a single child of this age drew all round the figure without leaving off; and the uniformity of procedure is most noteworthy. So much psychological work has stressed the differences between children that these uniformities deserve mention. And generally speaking, if I may digress a moment, it is the uniformities, the close resemblances between children, that strike one most, much more than their differences. I do not mean that they are equal, far from it, but they are strung out at different positions along a common, a very common, line of development.

I ought to mention that in none of my experimental schools had any lessons been given on the drawing of this figure, nor indeed had the figure ever been drawn before.

The test has been retained as suitable for English seven-year-old children, the same age as that for which Binet places it for French children, but with some hesitation; and I am quite prepared to find that further research may show it to be quite suitable as a six-year-old test; as indeed my own figures appear to indicate.

More especially, since it is quite clear to me that pencils, not pens, should be used, the test in that form becomes available for younger children than those for which Binet considered it suitable.

An Infant's Knowledge of Number.

By J. J. Webber, B.A.

The question of his knowledge of number arose when the proposal to send him to a kindergarten was discussed. First a search was made through the miscellaneous notes in the record kept, for signs of the early ideas of number, and then a definite attempt was made to take an inventory of his attainments to the date of writing. Although only a few questions were asked per day, he became restive under cross-examination when the answers involved nothing to *do*, and gave absurd replies in self-defence. His knowledge of number which is, I should imagine, not at all exceptional, is based partly on incidental and informal conversation about numbers, but mostly on some of his playthings which served a double purpose—Tillich's bricks, eight cubes fitting exactly into a box, a set of dominoes, nine-pins, eight marbles in a bag, and latterly a bead frame purchased at his own request.

In his seventeenth month he gave signs of attaching some meaning to "other" in such a remark as "Show me your hand; now the other"; and in his twenty-first month when given two pencils he held both up and shouted "Two!" In the following month he used the word "two" freely. In his twenty-third month he counted objects as "one, one, one" and used the phrase "one more" spontaneously, as far as could be judged, in his twenty-fourth month. Following this there was much play with the eight cubes and in his thirtieth month he began with Tillich's bricks, from which he has probably learnt more than from any other toy. In his thirty-second month he said the numbers one to seven in pretending to count some toys, but apart from constant play with the bricks nothing was recorded till his invention of the superlative of drought. "I'm eighty-thirsty!" (four years five months). Subsequently he showed that though unable to count eight he always knew whether his eight marbles were in the bag by arranging them in twos and counting the four groups.

When asked how many threes there were in the group of nine-pins, he stood them in three groups of three (four years six months), and having brought in six bundles of sticks indicated the number of twos by dropping them on the floor two at a time, saying, "One two, two twos, three twos." He noticed also that there were five screws at one side of his stool and then remarked: "There are *two fives* because the others are in the same position" (four years eight months). This recognition of symmetry seemed worth recording.

When he had bought his bead frame he soon found out that there were ten beads in each row, but though he could count ten fluently he became muddled when sliding the beads himself, not when this was done by someone else. In the former case the sequence generally broke down after six. The ten was counted in twos without difficulty. Questions requiring verbal answers, in which "apples" and "the little boy next door" played a considerable part were easily done if the number four were not exceeded, but he was very uncertain about two plus three and preferred to say he didn't know. I then insinuated that he might know two threes, but he quickly changed to safer ground, saying, "Two threes, two fours, but if I took away two from each four, there would be one four left." My next question was "How many twos are there in four?" "Wait a minute," he replied, and then drew four strokes with his pencil. "One two, two twos." I now drew a square and asked him to draw a line across it to halve it. He did this rather badly, but as soon as it was considered as a piece of bread-and-butter to be equally shared, he halved it very well and drew the knife which sliced it.

Again, without mentioning a number, I

gave him the names of four people who were to have equal pieces of the next square. He joined the middle points of opposite sides, but apparently remembering that he might want a second piece, drew another line across the upper half of the square! When the conditions were once more laid down and no second piece allowed, the division was properly done. He then drew his own square and divided it into four pieces for the people above, but in allotting the pieces he kept missing a person. I suggested putting an initial in each space. He did this, pointing out that no disputes would then arise.

An oblong slice of bread was now drawn and he was instructed to divide it among three named people. A good approximate third was cut off by the first line and then by the second, but he seemed to think there must be three cuts for three pieces, so he drew a third line close to the base of the oblong. This made a fourth small piece, which gave him trouble when allotting the pieces to the three individuals. After several attempts to shelve the difficulty he at last pointed to the narrow piece, saying "That's the crust."

Our next experiment was with Tillich's bricks. These were at first lightly pencilled to show that the lengths were formed of two cubes, three cubes and so on, but the marks had long since worn off. He recognised at sight "twos," "threes" and "fours," but beyond these lengths was very uncertain. When a "three" and a "two" were placed in line he counted the imaginary marks to find the total, but he would not do two "threes" or "three," "two" and "one" placed thus. On my questioning his total of five from three plus two he placed five single cubes alongside the "three" plus "two" to prove it. After giving me in error a "six" instead of a "five" he put a "three" and a "two" in line, saying, "If you make five this way, you know what you've got."

Groups of two, three, and four coins were instantly recognised, but five again is the stumbling block. Six halfpence were given him to pay Joe and Bill (drawn on paper) their wages. He halved the pile by sight and looking at the edges of the coins carefully, placed the two piles of three in position and then counted to test their equality. This procedure was successfully followed, using ten halfpence. Some counting of tapping was also done. In this he could distinguish two, three and four taps, was doubtful about five, and could not go beyond that number, and rhythms of three plus two or three plus three gave no help for five and six. When the tapping was fast two was called four and three called five or seven. The answers were soon perverse owing to the uninteresting nature of the test, and the victim himself said, "I could do it better with the beads."

The next task was to find the half of a square of paper. He drew a line down the middle with his finger nail, and replied when the requirement was made clearer, "Well, the only other way would be to fold it and cut." He folded a corner over roughly, and fetched the scissors, but when asked for exactly half he did what was asked successfully. Six coins were placed before him with the question, "How many twos?" With two fingers extended he touched the coins in pairs, and adopted the same method to find how many threes. The next questions were slightly more advanced. Three objects, collars as a matter of fact, were placed before him, and handing him nine pennies I said, "Here's the money. Find out how much each collar cost." He first carefully counted the coins and then placed two pennies beside each collar; after looking at the remainder in his hand he placed an additional penny on each pile and said the cost was threepence each. With twelve pennies and six papers to be bought he went through the same procedure, commencing with twopence, which by chance was the correct amount.

To pay for two sticks I now gave him five pennies. He placed the coins in two groups of two and said, looking at the remaining penny, "You've given me too much." I replied that fivepence was the cost. "Well, I'll try again," he said, and gathered up the coins. He came to a stop

again, saying as he placed the odd penny with the two, "This pile is too high." Further enquiry about the penny was met with "I'm afraid we must buy another stick with it."

He has, I have since found out, refused to be convinced that two halfpennies make a penny, since by placing the smaller coin on the larger he has shown, at least to his own satisfaction, that the amount of the larger coin left visible is insufficient to make another halfpenny.

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

8. *Rebukes and Punishments: improper methods.* In spite of all the care a wise parent may take, the child is still likely to commit acts of disobedience for which he must be punished. There are certain mischievous forms of reprimand and punishment which every parent would do well to avoid.

A mother, talking of her little girl of nine to a stranger, makes this remark: "*She is an idle child.*" "You story-teller," the child retorts in all sincerity and with no lack of respect. No one who heard the child's accent could fail to be struck by it. Then she turned away with a little shrug of the shoulders, as much as to say, "You are making fun of me, you know it isn't true." (As a matter of fact, her implied reproach was quite justified). A few minutes after, she said to her mother: "I don't want to work hard now; why did you say that, and before that gentleman too, what must he think of me?"

A friend was once chatting with a little girl of eleven about her games and her lessons. The father came in and said, quite abruptly, "*What is that you said? That's not very polite of you, is it? I'm sure they don't teach you that at school.*" The whole remark was made in a pretended tone of anger. Now the child had not been rude and the father had spoken without having heard a word of what she had been saying. She turned away at the undeserved reproach, and you saw her face quiver and cloud over; it was hard work to keep the tears back. She felt the injustice of her father's rebuke and her little heart was stirred to its depths. Why be so unjust? Because you are a father? Because she is your child, have you any right to treat her like that? Is it fair wilfully to plunge her into misery and unhappiness?

The most frequent and the gravest fault is to rebuke a child in public. A mother was telling her little girl that her conduct shocked a certain friend. "*It is no business of hers,*" said the child. The reply is worth thinking over. After all, our children's shortcomings are our own affair and ought not to be discussed before others.

A youth was once scolded before a number of people. His father, in order to show off his severity and his attention to his paternal obligations, read him a long lecture and almost in a tone of satisfaction recited his various misdeeds. The boy's reflection was, "How pleased father seems to be to humble me!"

One of the expressions most frequently used by parents is, "*How tiresome you are!*" They use it almost mechanically without ever dreaming that they are doing any harm. "It's you who are tiresome," one is tempted to retort. Why should we wound the child's legitimate self-esteem? We should cherish most tenderly the child's feeling of honour, for delicacy of conscience is the moral safeguard of child and adult. If we humiliate a little child, we run the risk of lowering his self-respect and of discouraging him. If we want him to respect and to be confident in himself, we must not blame him in public.

The question may arise: What is to be done if, in the course of conversation, there comes up the question of some conduct which has displeased us. Keep silence. It will be a good lesson for the culprit: he will realise by our expression what a source of discomfort to us his conduct is, he will be grateful to us for sparing him and he will want to show his gratitude.

"*You'll never be anything but a naughty*

child," is another remark often made. Then there is no need for improvement, the child can go on his way rejoicing !

How often do we not hear scolding after scolding hurled at the poor child's head : *" You're a story-teller. You are a greedy little girl. You are a naughty boy. She is as impudent as she can be. He is as obstinate as a donkey,"* etc. Oh, fathers and mothers ! When shall we learn the lesson that we shall never make our children better if we despise and scold them? We must touch their hearts, we cannot afford to wound them. Injuries never mended anybody.

Some parents think that they can correct their children's faults by railing at them. This is not a good way. Children can put up with a sudden burst of anger, but they do not understand sarcasm, " open or veiled insinuations. Such unexpected attacks wound them deeply, turn their gladness into misery and appear to them in the light of a betrayal." Yes, betrayal, they feel instinctively that this unkind mockery is the resource of the weak or the wicked. As a boy said one day to his father, *" You have a right to punish me, but it's not right for you to rail at me."* He spoke the truth.

Mme. Campan relates the following anecdote. " A little girl of about nine or ten who had gone with her parents to spend the octave of Corpus Christi in a country house near Paris, was tempted to take a gold watch belonging to one of her little friends. A search was made everywhere for the lost watch. It was found and the culprit discovered. The angry parents made the child walk in the procession of the Blessed Sacrament, wearing a board with the words *The girl who stole the watch.* The terrified child went through this shameful punishment. She returned to the house with her parents, having neither uttered a word nor shed a tear, went down through the yard, where she saw a maid, and said to her, ' Goodbye, Mary, I am disgraced for ever,' entered a little wood near and drowned herself in a pond."

In 1885 and 1886, there were recorded in Paris suicides of children of eleven or twelve years of age. They were school children whose fathers had said to them, *" Don't show yourselves to me at the end of the week unless you have better marks."* In their various satchels found on the banks of the Seine were notes in pretty much the same terms : " I dared not appear before my father with these marks."

" You must go to bed without your supper." A fine way of inducing your child to make good resolutions ! Tormented by hunger and unable to sleep, is it likely that the child will think about being good? No, it is not by depriving them of necessaries, that is to say, by further irritating the nerves, that you can hope to improve the soul. But it is the soul that it is necessary to affect, not the body.

" You shall lose your play-time." The following remarks of a schoolmaster with reference to this form of punishment are worthy of notice. " To cut down the recreations that are already too short and thus prolong the study periods that are already too long, seems to me not only cruel but foolish. The time of recreation is just what is needed to give the child an opportunity to work off his animal spirits, to move about, talk, make a noise, in short, to throw off the restraint of the class-room. If he has not been sensible enough to wait for these few moments to amuse himself, you actually deprive him of them. Do you suppose by this method to stamp out the need of which I have just spoken? " (A. Martin, *The Education of Character*).

"Go to the dark room." This is another cruel and foolish kind of punishment. Are you afraid that your child will become too brave or do you want to turn him into a coward, frightened of the dark? Have you ever thought that solitary confinement is a way of putting a person at peace with himself? " A lady told me that one day she was shut up in her room by her nurse. Looking out, she saw her little sisters running about and playing in the garden. By chance someone opened the door of the

room where she was, and found her just about to jump out the window, a height of twenty feet" (Mme. Campan).

The same objections may be applied to slaps. A little slap may be quite suitable in the case of a child of three (see chap. III., on Good Habits). You may often hear a man say: "A box on the ears is a very good thing. I remember one in particular which taught me a very sharp lesson. It showed me my place, and I always feel I owe a good deal to it." It must be remembered, however, that there are some dispositions not so forgiving. Legouvé tells a story of some woman who said, "My father gave me a whipping when I was a little girl. I am thirty now, and have children of my own. I love my father, but *I have never forgotten it.*"

The cane may be necessary at the age of three, but it is a mistake at ten, pernicious at fifteen, and positively disgraceful at twenty.

I could never have much hope of a child who is more afraid of a blow than of the loss to his own self-respect. And I cannot be very proud of myself when I give a child a whipping. I seem practically to say, "*I myself am of no use, but the cane counts.*" Scarcely a flattering reflection, and yet I am supposed to be adding to my reputation!

Suggestions for Study and Practice.

Teachers and Experimental Psychology. "A word of caution is needed...Mental tests are much more difficult to manipulate and interpret than may appear at first, and for first-class reliable research work a long and thorough training [in experimental psychology] is needed. Nevertheless a teacher with a 'bent' for scientific method, who has gone through a course in experimental psychology, such as that suggested in this book, may be able, through applying simple tests and experiments to his own class, to glean information about the mental characteristics of his pupils which will be of great interest to him and of no little value for his teaching work. The teacher of the class, indeed, is in some respects in a better position to carry out certain mental tests upon his children than is the professional experimental psychologist. He knows his children well, the disturbance caused by the entry of a stranger is avoided, and, in so far as the material used in the experiment resembles that given in ordinary school lessons, his presentation of it may be more uniformly efficient than that of the experimentalist who has had no experience in teaching children."—*C. W. Valentine, M.A.*, etc., in "*An Introduction to Experimental Psychology in Relation to Education.*"

Three Phases of Education. "We may analyse the ideal of education into three phases, more or less commingled: neuro-muscular training proper; the accumulation of data; and the development of skill, cleverness, or aptness, whether of the body predominantly or of the 'mind.' The opinion of competent authorities that the first three years of the usual school life were best devoted largely to outdoor evolution of the central neuro-muscular mechanism certainly is gaining more and more momentum. That the years from five to eight are not so devoted at present seems to be the fault of circumstance rather than of pedagogic demand. Meanwhile, until we get thus far, the physical education of school children is making masterful strides toward the goal. As for the second educational phase, the acquirement of facts, of concepts of quality and relation, for assimilation into 'knowledge,' this assuredly may be left to take care of itself, for the past has shown that it is competent to do this and, in fact, to overdo it. This purely intellectual side of education is ordinarily exaggerated at the expense of the affective side. The development of cleverness and skill, whether in many directions or in only one, whether with the 'mind' or primarily as a cunning of the hand and eye, represents, perhaps, the realest education, the vital 'leading-out' process of the personality learning how to live."—*George V. N.*

Dearborn, "The Sthenic Index," *The Pedagogical Seminary*, June, 1912.

Suggestion in School Hygiene. "What children should receive is not primarily hygienic instruction, but hygienic training. The whole instruction and discipline of the school should be so ordered as to develop habits of healthful activity, and yet hygienic training is rare, hygienic instruction, for the children at least, is common. It is much easier to show pictures of the drunkard's liver and disordered stomach than it is to give training to the habits of health. Some instruction in hygiene, it is true, the children should have, but this will come better incidentally to training in hygiene... Care must always be taken to avoid rousing morbid self-consciousness and the spread of unhealthful attitudes and nervous disorders by suggestion... In the whole field of school hygiene, theoretical, experimental, and practical, the psychological point of view is important; and the often neglected factor of suggestion should receive careful consideration by teacher, school nurse and school physician, and investigator... The legitimate function of the teacher is suggestion [of healthful activities, of wholesome interests, and the stimulus of success]. This is not only of primary significance in teaching and discipline, but also of tremendous importance in the whole hygiene of instruction.—*Wm. H. Burnham*, "Suggestion in School Hygiene," *The Pedagogical Seminary*, June, 1912.

Conflict of Parent's and Child's Wills. "The conflict of wills is bound to come between every intelligent child and its parent. A very wise uncle of mine told me that he had studied this with his little son, and observed that these fights for mastery came periodically, as if the child were testing his power from time to time, hoping each time that he had at last become strong enough to conquer. The great point is to teach the child to control the will, not to try to lessen the child's will, which is one of its best assets for its entrance into a world full of difficulties, where a strong will well under control is of inestimable value. Here victory can only be assured when the parent has learnt to control his *own* will. There is no doubt whatever that a strong-willed child is much less convenient to the elders than one with a complaisant disposition, but then *convenience* is not to be considered if we would give our best to our children."—*Mrs. Walter Greg*, "The Relation of the Parent to the Child," *The Parents' Review*, September, 1914.

A Psycho-Educational School Clinic. "Dr. J. E. Wallace Wallin has been appointed to the position of Director of the Psycho-Educational Clinic in the St. Louis public schools. The clinic will be organised as an independent bureau in the educational division of the schools, not as a minor division of the department of school hygiene or medical inspection, but it will work in close co-operation with the latter department. The clinic will exercise administrative control, under the regulations of the superintendent's office, over the examination, classification, education, placing, and transfer of the mentally exceptional children in the public schools. The actual supervision of the work in the special classes will be done by a special supervisor, working under the directions of the clinic. Each child will be given a sociological, pedagogical, hereditary, and medical examination. It is expected that a staff of assistants commensurate with the growing needs of the clinic will gradually be organised, and that, eventually, the clinic organisation will include a bureau of vocational guidance. The clinic aims to serve as an educational, social, and vocational clearing-house for the community."—*The Journal of Educational Psychology*, June, 1914.

The Child-Study Association and the Constituent Societies.

THE EDINBURGH CONFERENCE.

By T. G. Tibbey, B.A.

Those who visited Edinburgh for the Conference of the Association in the early days of June would wish to put on record their appreciation of the excellent arrange-

ments made, the very kindly hospitality offered, and the real work that was accomplished. For the Conference was emphatically a success; some valuable papers were read, the audiences were interested and quick to appreciate the points raised, and the discussions were uniformly good, even though the varied chairmen lived in happy ignorance of all the carefully printed rules regarding time limits. Thus, though there were many excellent speeches, doubtless some of the best were not delivered. But that always happens; it is at least consoling to those who were perforce silent.

The topics dealt with centred mainly round mental tests, and the prevailing note of the Conference was the importance of research and the part that child-study societies could do in co-operating with those who were undertaking enquiries, and in discussing and popularising some of the conclusions reached. Now that so much is being done in practically every educational centre in the way of investigations into children's activities, which is child-study even if not always called so, it would be well if the committees of constituent societies would seek to find out what is being attempted in that direction in their own district, and in what way their members could effectively take part. This might become a very useful and vitalising part of their work.

Equally successful was the social side of the Conference. The reception in the City Chambers on the Thursday evening by the Lord Provost, magistrates and Council, gave official sanction and dignity to our presence, and was much appreciated, whilst even the weather, which had threatened to spoil the garden party held in the new and beautiful Zoological Gardens, at the last moment forbore and enabled a very charming function to be successfully carried out. Nor must mention be omitted of the courtesy extended to us at the Outlook Tower, the Training College, and the many schools thrown open to our inspection. The best thanks of the Association are due to the Lord Provost, and to Lord and Lady Salvesen, to whom much is owing for the interest and help they gave to the Conference; to the arrangements and hospitality committees, with Miss Morin and Miss Sutton the secretaries; and not least, to the many kindly hosts and hostesses who worthily maintained the traditions of the city in their most generous and courteous entertainment of the delegates.

At the strenuous Council meeting held on the Friday morning two new rules were passed which should have considerable influence upon the future of the Association. The effect of the first of these is that, after this year constituent societies will pay no capitation fee on behalf of those members who subscribe to the journal; it is therefore open to the societies to encourage their members to take the journal by reducing their subscriptions to that extent. An increase in its circulation is a matter of primary importance to the Association; it is at once the most efficient link between the societies and our most effective method of propaganda, for it outranges all other of our activities in the extent of its appeal, whilst it is steadily becoming a valuable source of revenue and receiving wide appreciation.

The second new rule ought also to lead to developments in another direction. Although at every Council meeting some four or five societies are represented, it has long been felt that the extent of the representation was not satisfactory. Even when, at the suggestion of a London delegate, a meeting was convened at Birmingham as being more central, no improvement was effected. It has therefore been agreed, as an experiment, to offer half fares, with certain reservations, for two attendances of delegates from each society each year.

It needs to be noted that here again the effectiveness of this rule is in the hands of each society, which can either increase the half to whole fares, where this is necessary to secure representation, or what would be more useful, could offer half fares to delegates for other attendances beyond the two for which the Association will pay. If, in addition to this, hospitality for one night

could be extended where necessary to delegates coming from a distance a more regular representation of societies at Council meetings could be secured, with a consequent stronger feeling of solidarity and more effective work.

The Library.—One or two instances having occurred where borrowers ceased to be members without returning their books and could no longer be traced, and one case where all knowledge of a book was disclaimed even though a signed voucher had been returned at the time of its receipt, it has been found necessary to amend the rules as follows :

" Books may be retained for two months and will be recalled at the end of that period, or, if required by other members, at the expiration of fourteen days from the date of issue."

" A charge of 2d. per week, or part of a week, will be incurred for all works not returned within eight days after such application has been made for them."

It is hoped that these new rules will in no way diminish the number of borrowers; it is rarely necessary to recall a book at the end of fourteen days.

The Halifax Society.—The following list of lectures for 1914-15 has been arranged :—

October 14th.—Wednesday. Professor Bompas Smith, M.A., Manchester University : *Some Fundamental Questions in the Training of Young Children.*

October 28th.—Dr. Helen Wodehouse, M.A., Bingley Training College : *What a Training College ought to be and do.*

November 11th.—Miss Purvis, Fielden School, Manchester : *The Social Aspects of the School.*

November 25th.—Miss Wilena Hitching, Derby County Council : *The Care of a Baby.*

January 20th.—The Rev. Prebendary Burn, D.D. : *Education in the Fourth Century, just before the Barbarian Invasion.*

February 3rd.—T. H. Pear, M.A., Psychological Laboratory, Manchester University : *The Psychological Aspects of Some of the Subjects in the Elementary Curriculum.*

February 17th.—Dr. Lewis Williams, D.P.H., Medical Superintendent, Bradford : *The Effect of School Life on Children.*

The Manchester Society.—The syllabus of lectures for 1914-15 is as follows :—

October 9th.—*The Teachers' Register* (Joint Meeting with Teachers' Guild). Speakers : Prof. J. J. Findlay, Ph.D., The University, Manchester; Miss M. A. Douglas, Head Mistress of the Godolphin School, Salisbury; Geo. Sharples, Esq., M.A., Head Master of the Waterloo Road Schools, Manchester; A. Nixon, Esq., F.C.A., Principal of the School of Commerce.

November 28th.—Meeting of the Associated Educational Societies. Reception at the University, Manchester.

December 7th.—*The Psychology of Thinking in Relation to Education.* Mr. T. H. Pear, B.Sc., Manchester University.

January 29th.—*Montessori Evening* (Joint Meeting with Teachers' Guild). Speaker : Mr. Bertram Hawker.

February 19th.—*Pre-School Clinics, from the Medical Aspect.* Dr. C. Paget Lapage.

March 12th.—*Demonstration and Lecture on the Physical Training of Young Children.* Miss Hanse Andersen, Chelsea Physical Training College.

May 5th.—Visit to the Trade School, Manchester (Joint Meeting with the Teachers' Guild).

Notices and News.

Madame Montessori is announced to be in London during October and November to conduct a course of lectures, demonstrations, observations, and discussions. Judging by the fees, these are intended for the very rich only. She has also promised to give a lecture to the members of the College of Preceptors on November 3rd. She will lecture in French.

Miss Swannell, who has obtained Madame Montessori's diploma, has commenced a course of lectures on the " Montessori Method " for teachers.

The Froebel Society announces the following list of lectures for 1914 :—Wednesday, October 7th, at 7.30 p.m., *Free Kindergartens in London*, by Miss E. Lawrence; Wednesday, November 4th, at 7.30 p.m., *A School Journey*, by Miss Mallin and Mr. A. T. Prestage; Wednesday, December 9th, at 6 p.m., *School Training for Young Children in Musical Appreciation*, by Miss Storr, M.A. It is hoped that Dr. Maria Montessori will give a lecture (probably on October 29th). The lectures are to be given at the College of Preceptors, Bloomsbury Square, and a charge of 6d. is made to non-members, who must get tickets previously from the Secretary, 4, Bloomsbury Square, W.C.

Scouting as Moral Training.—The Boy Scouts system, modified to suit local conditions, has been introduced into the Sardar's High School, Belgaum, India. " The chief aim is to inculcate *practical* morality and, the Indian boy being somewhat apathetic, to call forth keenness in work and play . . . The vow of the Scout includes a pledge to avoid ' sin.' Sin is defined to be a form of wrongdoing, such as dishonesty or impurity, that would be condemned by all castes " (*Journal of Education*, September, 1914).

New Journals on Psychology. Germany was about to bring out two such journals. " The *Zentralblatt für Psychologie und Psychologische Pädagogik* is to be published in Würzburg. Its aim will be to give in short form the results of all new investigations in its field. The *Zeitschrift für*

Individualpsychologie will contain studies in psychotherapy, psychology, and pedagogy. The The publisher is Reinhardt, of München " (*ibid*).

Reviews.

An Introduction to Experimental Psychology in Relation to Education. By C. W. Valentine, M.A. Pp. vii., 190. W. B. Clive, Price 2s. 6d.

" In this little book an account is given of a number of psychological experiments which bear directly upon educational problems and on the work of the teacher in the school. All the experiments described can be carried out without any apparatus except such as can easily be made with pen and paper." Thus saith the author, and we may add that it would be difficult to find a more judicious and helpful introduction to actual experimental psychology in schools, such as teachers can, and should, do for their pupils' and their own advantage. Part I. gives detailed instructions for experiments on: association and reproduction of ideas; imagery; attention; economical methods of learning; mental types; rote memory; auditory and visual tests; the value of a map; memory; the acquirement of skill; mental fatigue; and general intelligence. Part II. is a discussion on the results of the experiments and their application to school-children.

On Dreams. By Prof. D. Sigm. Freud. Translated by M. D. Eder. Pp. xxxiii. 110. William Heinemann. Price 3s. 6d. net.

This is an extremely helpful introduction to the theory of Psycho-analysis, and to Dr. Freud's larger works on this subject. If his theory be sound, and many competent critics accept it, both psychologists and medical men have a new field of knowledge opened to them, and one of profound importance. The introduction by Dr. W. Leslie Mackenzie is a very lucid and judicious essay. Dr. Eder has made a very readable and stylish translation.

Biology of Sex for Parents and Teachers. By T. W. Galloway, Ph.D. Pp. ix., 105. D. C. Heath and Company. London: Messrs. George G. Harrap and Co. Price 2s. net.

Dr. Galloway, Professor of Biology, James Millikin University, Decatur, Ill. (U.S.A.), writes with the purpose of bringing " before parents and teachers some idea of the biological, social, and moral foundations which must underlie all this work and something of the spirit which must characterise it." His view is that " If sex instruction is to amount to anything worth while, it must begin, and all its foundations be laid, in the home." The topics dealt with are: meaning of sex; results of a questionnaire to college men and women; guiding principles in sex instruction; reproduction and unselfishness; sex and selfishness; sex and development; social and moral bearing of sex; time and manner of instruction; eugenics; and the problems of parents. This is one of the most reasonable and well reasoned books on the subject we have seen.

The Future of Education. By F. Clement C. Egerton. Pp. 303. G. Bell and Sons, Ltd. Price 3s. 6d. net.

Though there are some things in this book which were well worth writing, there is, in the critic's opinion, so much that is exaggerated, unfair, and inaccurate, that only those who know our elementary schools thoroughly and have judicial and tolerant minds can hope to get much good from reading it. This is the more regrettable since Mr. Egerton is a fearless and incisive critic.

The School Journey Record, 1913. Pp. 157. Hon. Sec., Harry W. Barter, 51, Elm Grove, Peckham, London, S.E. Price 2s. to non-members.

Those interested in school journeys will find this a very helpful booklet. It is full of practical information and guidance, and contains descriptions and illustrations of school journeys, as well as a paper on " The Open-Air School Type," and summary and outlines of addresses on school journeys. If it be possible to issue an edition at sixpence, it ought to have a wide circulation.

Le Calcul par L'Image. By Georges Rouma. Pp. 63. A. De Boeck, 265, Rue Royale, Bruxelles.

An ingenious and helpful system for teaching, to eye-minded children, numbers up to ten by means of pictures, after the child has " practised with objects in the first place." A general idea of the plan may be given by describing the teaching of number three: (*a*) picture of two boys holding hands and one in the distance, (*b*) the three boys close together playing with three marbles = 2 + 1; (*a*) one mouse in a cage and two outside, (*b*) three mice in a cage = 1 + 2; (*a*) a girl with one bird near her feet and two in the distance, (*b*) the girl with two birds near her feet and one in the distance, (*c*) the girl with the three birds near her feet = 1 + 1 + 1. On next page (*a*) three plums on a tree, and boy with fingers on one, (*b*) two plums on the tree, and boy eating one = 3 — 1; and other pictures for 3 — 2, and 3 — 3. Finally: a hand with three fingers up and two down, three rods, and the figures III. and 3.

Publications Received.—*Journal of Education; Educational Times; Educational Review* (U.S.A.); *The American Teacher* (U.S.A.); *L'Educateur Moderne; The Parents' Review; The Journal of Educational Psychology* (U.S.A.); *The London Teacher; Le Jardin D'Enfants; The Bulletin of the American Institute of Child Life* (U.S.A.); *School and Life* (Russia); *Penal Reform League Quarterly Record; Secondary Education; El Monitor de la Educación Común* (Buenos Aires).

Child-Study.

The Journal of the Child-Study Society.

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Intensive Child Culture. II.

By Sir James Crichton-Browne, M.D., LL.D., D.SC., F.R.S.

The Mental Evolution of the Child. Thanks to child-study in the sense in which it is pursued by this Society we have now recorded data elucidating the mental progress of the infant and child. The first contribution to the subject, and a memorable one, was Charles Darwin's "Biographical Sketch of a Baby," which appeared in *Mind* in 1877, and after that came a fragment, now, I fear, almost forgotten, but which, being in Edinburgh, I am glad to recall, "A Chronicle of Infant Development and Characteristics," by the late Sir Walter G. Simpson, the son of that illustrious man who gave so good a gift to suffering humanity, and whose statue adorns Princes Street: Sir James Simpson. That fragment was published in the *Journal of Mental Science* in 1893. Sir Walter made careful and minute observations on the dawning mental powers of his two infant sons, James and Odo, on the very lines which have since been so successfully followed by Kussmaul, by Oppenheim, by Miss Shinn, and above all by Preyer.

From these and other sources we now know much more than was ever before known of embryonic or juvenile psychology and clearly realise the gradual dwindling of the mental growth power, very energetic at birth and a few months afterwards, and slowly fining down to next to nothing. At the moment of birth the instinct of sucking is, beyond the mere physiological working of its various organs, the infant's only equipment. But on its very first day the uninformed baby begins its voyage of discovery. It takes cognizance of light, and at the end of a month there are ideas and memory, for, when held in a proper position in the arms, it shows that it expects to be fed. At two months it has grasped the sense of space, for it will follow a bright light, or will hold its head on one side to catch a sound. At the end of the third month it has found not merely that its muscles will contract and jerk its limbs about, but that they may be contracted in such a way that the movements may be directed and co-ordinated.

Of the life of vegetation lived by the baby in the first three months Miss Shinn says: "No grown person ever experienced such an expansion of life, such a progress from power to power, in that length of time." At the end of four months the baby shows some idea of another great principle, the knowledge that it can do something, and it does it, having purpose in what it does; and at about the same age it makes the amazing discovery that the two sides of an object are not separate things, but parts of the same, for it realises that the face and the back of the head of a person belong to one and the same object. It has acquired the idea of objects in the world around it. Then at five months comes the handling age, when the baby feels everything it can lay hold of, and feels also parts of its own body, reaching the conception of personal individual existence.

The first five months constitute the first epoch of the baby's development. The second epoch is that of research, constant, uninterrupted, untiring. In the sixth-month baby we recognise already the notion of cause and effect, and also the consciousness of the possibilities of human intercourse; it wants human companion-

ship, and with that the baby equipment to start upon life is pretty well complete. "It has discovered," says Professor Minot, "the material universe in which it lives, the succession of time, the nature of space, cause and effect, its ego and its relationship with other individuals of its species." Do we get at any time in life much beyond this? We elaborate, but do we go further? By eight months the baby is on the full career of experiment and observation. Everything with which it comes in contact interests it. It looks at it, seizes hold of it, tries to pull it to pieces, tests its texture, tensile strength, and other qualities, and puts it in its mouth to question it by taste. At the same time it is making locomotive experiments, rolling, creeping, tumbling, and walking erect at twelve months.

Now, in order to realise the slowing down of mental growth, compare with this express baby the goods-train schoolboy who has difficulties with the alphabet, struggles tediously through the Latin grammar, wrestles painfully, not joyously, with geometry, and who the older he gets proceeds more and more tardily in the pursuit of any study and in the acquirement of knowledge. The power of rapid learning which the baby possessed has already greatly lessened.

In athletes we see illustration of the decline of the acquiring power with advancing years. In the case of golf I am told that the middle-aged man who takes to it and for whom it is prescribed as so salutary an exercise, never really gets beyond the clumsy stage. The young men learn better, but the great golf players are those who began as children, at twelve or fourteen years of age, and became in a few months experts. Three lessons in bicycling are, it is said, sufficient for a child of eight, ten are necessary for an intelligent adult, but a hundred will not suffice for a man of seventy.

The rapid mental growth of the infant and young child corresponds, of course, with the evolution of inherited powers under appropriate stimuli, and goes on spontaneously, or with only a little help, under adequate protection; but educability proper is, like brain growth, a constantly diminishing quantity, and the corollary of what has been said is that full advantage should be taken of the plastic epochs of life, when capacity is being evoked and when the foundations of character are being laid down; they are the educative periods. It is by the correlation of brain growth and mind growth that sure guidance in child-study may be attained.

The Direction of Child Growth. I have been traversing very cursorily ground in regard to brain growth and mind growth, which must be, I am sure, familiar to many of you; and I would like to afford you relief by diverging into what is, at any rate, a novel aspect of child-study, and say something about some methods of artificially promoting child growth which have been lately suggested.

And first as regards electricity: The age in which we live is electrical, both in a literal and in a metaphorical sense, and it seems certain that the application of electricity to child culture will have to be seriously considered before long. Its influence on vegetative life has been under investigation for one hundred and fifty years, and in recent times very emphatic and impressive statements have been made as to the influence of electrical fields or currents on plant growth. We have been told that an increase of as much as forty-five per cent. in the yield of crops can be obtained by means of high tension electricity applied to the land by overhead wires. It has been predicted that electric agriculture will transform the face of the earth. More recently we have been assured that the electrical stimulus has a powerful control over animal life. Chickens, it is affirmed, reared in a chicken house under an electric current derived from a large helix of heavily insulated wire, wound round it in turns about 6in. apart, and applied for ten minutes every hour during the day, grew at double the rate of chickens not so treated, showed greatly diminished mortality and increased energy of character, evinced in the complete absence of the timidity which chickens ordinarily manifest.

Last of all, we have heard from Sweden

that artificial electrification has a powerful influence on human growth and development. It is alleged, and the statement has been widely circulated and aroused great interest, that of two groups of school children, of the same age and in similar circumstances, subjected to experiment at Stockholm, the group placed in a schoolroom into the atmosphere of which there was a discharge of electricity was found at the end of six months to have grown faster, to be in better and more vigorous health, and to be more successful in examination tests, than the control group without benefit of electricity.

Now I refer to these statements simply to utter a word of caution in regard to them, and to enter a protest against any electrical pranks which might be thus suggested, with human boys and girls, in the present state of our knowledge. It is impossible to doubt that the electrical discharge has a notable effect on the respiration of plants, on their synthesis of food, on the evaporation of water vapour from the leaf and on other vital processes, but extensive laboratory investigations are still necessary in order that these may be accurately defined. Agriculture and horticulture may hereafter derive valuable services from electricity, but the nature and extent of these services and their commercial practicability have yet to be determined.

The problems involved are highly complex; the sources of fallacy are numerous. The observations recorded on the beneficial influence of electricity on the yield of the crops, for example, potatoes, have hitherto been accepted as established, but Professor Priestly, of Leeds, who has brought fine scientific caution to the investigation of the subject, only three months ago, warned us that the significance of many of the statements of the earlier workers will have to be reconsidered. "It is obviously no use," he has said, "to weigh crops from experimental and control areas, with great care, unless these figures could be contrasted with significant figures as to the electrical comparison between the two areas. To take an extreme case, an increased yield of fifty per cent. would be of little help to the experimenter unless it could be ascertained what were the actual electrical conditions accompanying the increased yield. An attempt to repeat the results might be made with different electrical quantities and an entirely different yield obtained." Professor Priestly's impression is that in glass-houses in which the great difficulty is insulation, critical tests will show that up to the present no satisfactory experiments have been carried out, but that the discharge has been impartially distributed upon the many earthed conductors from supporting wires to hot water pipes waiting to receive it.

Even should it be conclusively proved that the electrification of crops gives a decided increase, many years of patient investigation will still be necessary before its practical utility can be established. It will have to be shown that apart from bulk there is no deterioration in the quality of the crops subjected to such intensive cultivation, that their fertility is unimpaired, and that there is no diminution in their resistance to disease.

What has been said as to the danger of brief experiments and hasty generalisations in regard to the electrification of plants, applies with tenfold force to the electrification of animals, and as to the chickens which perked up so prodigiously under the helix, I confess I am sceptical. The easy and apparently somewhat crude experiments performed on one poultry farm will have to be repeated and varied on many other farms, and by many independent observers, before it can be accepted that, as is affirmed, an electrified chicken will maintain normal growth with two-thirds only of the normal amount of food, and will, with the normal amount of food, at the end of a month be twice as heavy as a non-electrified chicken. An irreverent friend, to whom I lately mentioned the alleged heightened vitality and audacity of chickens reared under high tension currents, remarked: "That accounts for the energy and push of you Scotchmen. You get more of the aurora borealis than we English do."

As regards the alleged experiments on school children, of which so much has been made, and which seemed to open up such vast possibilities for the future of our race, and the wholesale manufacture of supermen and superwomen,. I am in a position to say that they have been entirely misrepresented and afford not a shadow of foundation for the hopes built up on them. These experiments were, it was reported, performed by that distinguished man of science, Professor Svante Arrhenius, Director of the Nobel Institute of Physical Chemistry at Stockholm, and any conclusions arrived at by him in such an investigation would of course come with the utmost weight and authority. But I have been in communication with Professor Arrhenius on the subject, and he has written to me as follows:

"My first experiments with about fifty children subject to electrification in a room where the potential in the upper part was about 1,500 volts higher than at the floor, and fifty children without electrification, seemed to give good results, a very strong result in favour of the electrified children, as indicated by their increase in weight and other sanitary conditions. But repeated experiments, with a much greater material, gave no positive results at all. Therefore I am unable to give any certain statement. It is very possible that experiments arranged in another manner may give better results."

During the last fortnight I have had opportunities of having conversations with Professor Arrhenius in London about his experiments, and find that they were not performed on school children as stated, but on infants under one year of age in the Orphan Asylum, so that all the allegations as to the superior intelligence and aptitude of the electrified children are pure invention. The first experiment referred to by Professor Arrhenius on a group of fifty infants, who were electrified with a control group of fifty who were not so, seemed to give surprising results in increase in weight and growth in the former as compared with the latter, but further inquiry disclosed that the zealous nurse to whom the arrangements for the experiment had been entrusted had, under a mistaken notion, put into the group for electrification all the strong, vigorous babies, and into the control group all the weak and ailing ones. The electrified children therefore had a good start in weight, and growth, and vigour, and did not do more than maintain their position during the experiment. Subsequent experiments on a larger scale, and with a more equitable division of material, showed no influence of the electrification one way or the other.

It is, of course, possible, as Professor Arrhenius says, that experiments arranged in another manner and carried on in a prolonged and exhaustive way, and with proper consideration of the many factors and variables, might give better and definite results. Electricity is a potent agent. With a sufficient voltage in their nurseries or school-rooms babies and children could be electrocuted, with minor degrees their physiological processes might no doubt be profoundly modified, but whether for better or worse, immediately and ultimately, it is impossible to say.

Binet's Mental Tests; What they are, and what we can do with them. VI. Continued.

By W. H. Winch, M.A.

(*All rights reserved*).

Binet's Fifth Test for Seven-year-old Children is an exercise in immediate memory. The experimenter requires the child to repeat after him five numerals not in consecutive order. Binet prints practically no instructions for giving this test. He refers to the previous exercise in which he used numerals as a memory test. Nor does he give results in any detail: he says simply that children can repeat three numerals at four years of age, but that it is not until seven years of age that they can repeat five numerals, and even at that age, not more than three-quarters of them can do it.

Our English results are better than Binet's. But, perhaps, I had better say exactly how the test was administered first. Then, any one interested can try a few children of various ages and compare his results with mine. The five numerals were said clearly by the experimenter with half-a-second's interval between them, and the child was asked to repeat them. Three sets were given :—

Firstly : 5, 2, 9, 6, 3.
Secondly : 7, 1, 4, 8, 2.
Thirdly : 4, 9, 7, 2, 5.

A child was considered to have satisfied the test if he could repeat two of the three sets in correct order.

Of the English children of *four years of age* who attempted this test, no less than thirty per cent. " passed." This was the figure in both the " poor " schools (thirty-two per cent. in the one and thirty per cent. in the other). Of those who failed one or two could repeat three numbers only; a few gave four numbers; but the great majority gave five numerals, though either in an incorrect order, or with some interpolated figures.

At the age of five years forty-eight per cent. of the English children gave satisfactory answers. A few of those who failed gave four numerals instead of five, but the majority of those who were unsuccessful gave the correct numbers, but in an incorrect order. The most common mistake was the inversion of the third and fourth numerals.

At the age of six years sixty per cent. of the children " passed." Of those who failed to do so, the commonest error was, again, that of reversing the order of the third and fourth numerals. One boy left out the fourth numeral every time, and a girl omitted the first number, an unusual error, at each of her three trials.

At the age of seven years the number of " passes " rose to eighty-four per cent. The errors fell wholly into two groups; half of those who failed reversed the third and fourth numerals, and half of them omitted the fourth numeral altogether.

The figures given above are, as usual, those for our intermediate school. Age for age, the percentages of " passes " for children in the " very poor " school ran closely parallel to these, whilst those for the corresponding age-groups in the well-situated school were much higher all along the line. Whatever relationship may exist between sheer brute memory and rational capacity later on, in adolescent and adult life, there is little doubt that in young children the correlation is positive, and is very high. Memory exercises of this kind are excellent tests of natural ability, as they are not so susceptible of improvement by practice as some of Binet's tests are. Personally, for older children especially, I have always used unassociated consonants, not numerals, as the former are much more susceptible of variation into different sets than the numerals. But these numerals will serve quite well for the little ones.

The test just described has been found suitable for the grading of seven-year-old children, the same age as that for which Binet places it for French children.

Binet's Sixth Test for Seven-year-old Children deals with the description of a picture. A previous test, the reader will remember, dealt also with the description of a picture. Here are Binet's results : At three, four, and five years of age French children give nothing but enumerations, descriptions are very unusual (" insolites "). At six, a very small number of children, hardly a sixth, try to describe the picture. But at seven years of age description, rather than enumeration, has become quite general. This, says Binet, shows the enormous acquisition which has been made in language between the ages of six and seven. In practical work with this test we soon found that we needed a much more detailed and definite guide than Binet supplies us with, and I suggest to the psychologist or teacher who wishes to know precisely how to assess the descriptions which children give, to consult my *Monograph on Children's Perceptions*, in which children's descriptions are subjected to an analysis and numerical estimation which makes it easy to place any child in its appropriate mental year

for observational work. But, for the present, let us take the rougher methods of Binet, with one modification. That modification or determination must be made. It is easy enough to understand what a mere enumeration of the persons and things in the picture may be. There's a lady and a boy, a table, and so on. Most of us have heard little children talk like this when they are looking at a picture. But when can a child be said to have *described* the picture? If we are to wait and call everything enumeration until a summary description can be given, such as, say, "*A family at table,*" we are going to wait a very long time, and we shall be throwing away intermediate results of great value. Description is too vague a term, and we must remember that when children describe a picture they do not give a title fit for a catalogue, but tell us all about it. So we decided, in carrying out this test with English children, to consider the child to have passed the test satisfactorily if he said something more about the picture, or any part of it, than a mere enumeration of objects. We used in all cases a simple picture of domestic life.

At the age of four years not less than twenty per cent. of our English children gave very fair descriptions of the picture, the remaining eighty per cent. gave nothing but isolated enumerations.

At the age of five years the number of satisfactory descriptions increased to eighty-eight per cent., though most of them were not of a very high order.

At the age of six years, over ninety per cent. gave good descriptions of the picture. One girl, after giving a very good description, said in addition, "There's a mother and a baby and two sons." A boy said, "I think the baby is a girl, because it has girls' clothes on." Some of the children mentioned the material of which the objects were made, an unusual feature in the reports of young children. For example, statements were made that the "plates are made of china," "the chairs are made of wood," "the curtains are made of lace."

At the age of seven years, no less than one hundred per cent. of the children (except in the "very poor" school) had passed well beyond the enumerative stage, and the descriptions of these children were often good and continuous. Some of them made remarks which implied closely attentive observation; for example, "The baby is holding out its hand like this" (the child made the appropriate movement); "The baby has got curly hair"; "The boy has got stripes on his trousers"; "The baby is sitting on a high chair"; "There's a little bit of the boy's collar to be seen"; "The baby is sitting up straight"; "There's a soldier's hat" (it was really a tea-cosy) "on the table, and the baby is playing with it." Many positional references were given, for example, "beside it," "around it," "next to each other." Numbers were sometimes given, as for instance, "There are two ornaments," "There are two boys and a mother and two little girls." Some children began their accounts by making up imaginative stories about the picture (doubtless a pedagogical factor was operating) but settled down to a description of their observations afterwards.

As I have said already, it is difficult to make out precisely what Binet's "pass" standard really was. But for English children it seems clear that the "test" is most suitably placed for English children in the five or six-year-old group, not in the seven-year group as Binet places it. If this exercise is to be used as a means of accurate mental diagnosis, the same picture should be used in all cases, and the reports marked on a definite numerical system. I have myself used the German "Breakfast picture" on a large scale, and found it most satisfactory. It is reproduced in my *Monograph on Children's Perceptions,* and the system of marking the child's descriptions is there described at length, and much more briefly in an account of *Aussage* work with young English children, published in the *Proceedings of the First International Congress of Child-Study.*

Binet's Seventh Test for Seven-year-old Children is a test in counting. We have had a "counting" test before, but Binet is of opinion that an increase in the number of things to be counted so considerably augments the difficulty of the test, that it is not until a child is seven years of age that he can count as many as thirteen things. English teachers will at once deny this, and we shall see, presently, how our children acquit themselves.

We are really face to face with a characteristic difference between French and English children, whether a natural difference or an acquired difference it is difficult to say. In linguistic attainment the young French child is ahead of our own, very considerably, as we have seen to some extent already, and as we shall see much more markedly when we consider Binet's reading test for young children. But in what may, perhaps, be described as the "realistic" aspects of knowledge, certainly in the numerical aspect, our children are much in advance of the French.

Probably each nation would do well to change its pedagogical practices a little: we to lay more stress on our mother tongue, and the French to put more emphasis on number and the cognate aspects of things themselves. However, this is a digression; let me get back to the tests.

Binet, in this test, directs the experimenter to place thirteen coins on a table (he himself used "sous"), next to, but not covering each other. The child is asked to point with his finger to each coin, one at a time, and as he points to it he is to say the appropriate number. No mistakes of any kind are allowed. Quite obviously the child may not know the correct order of the numerals, he may not succeed in pointing to the right coin as he pronounces the word, he may touch two coins at once, and he may count the same coin twice over. Any of these errors will disqualify. "We have seen," says Binet, "children of six, who, as they counted the coins one by one, moved those they *had* counted away from those they *had not*. Then, in that delightful style of his, half serious, half playful, he apostrophises these clever "sixes": *C'est la perfection de la méthode, viola de bons commençants.* But of these clever children there are but few in French schools, for he goes on to say that only a third of his six-year-old children succeeded with the test, though at seven nearly all of them could do it.

I am sorry to say that I am not well acquainted personally with the pedagogical practices of *les écoles maternelles* of France, and I do not care to speak from official syllabuses; they are invariably misleading. But I can hardly believe that the very serious differences between our own children and the French in their capacity to deal with this test are products wholly of *natural* difference. I strongly suspect the influence of a big pedagogical factor in favour of our own children. But whether the difference is a natural one or a pedagogical one, the fact remains there is a difference, a great difference, and one always in favour of the English. Let us examine in detail what the children did in London schools; we used pennies, not, as Binet did, halfpennies.

At four years of age, no less than forty-eight per cent. of the children in our "intermediate school" passed the test (in the "very poor" school the corresponding percentage was forty). Those who failed did not fail because they could not count up to thirteen. That was not the difficulty. The common errors were to touch two pennies for one number, and one penny for two numbers. The first-named error occurred most frequently when the name of the numeral contained more than one syllable; for instance, seven, eleven, thirteen. In these cases there was a strong tendency to give a syllable, not the whole number word, to each penny.

At five years of age ninety-two per cent. of the children in the "intermediate" school passed the test. The corresponding figures for the other schools were eighty-five for the school well situated and eighty for the "very poor" school. It is unusual to find the well-situated school below the intermediate

one; but the results correspond closely, and show us that the test, under English pedagogical conditions, at any rate, is a perfectly suitable one for five-year-old children in all schools. Binet, I may remind the reader, did not even *try* the test with children below six. Our five-year-old children did not fail because they could not count. Most of those who failed did so because they reached the thirteenth penny before arriving at that numeral.

At six years of age there were but one or two failures altogether in all the schools. Some of the abler children said "A penny, twopence, threepence, fourpence, fivepence," and so on, until the twelfth penny was reached, and then they said, "Twelve pence, that is one shilling." Then they began again, "One penny." Of course these children "passed"; they had done better than merely count thirteen. And, if need be, they could quite easily be asked to count thirteen shillings (if it were near their teacher's pay-day) or thirteen matches, or something else inexpensive and near at hand.

At seven years of age (the age for which Binet considers the test suitable for French children) all the children in all three schools passed easily. Several of the children did what some of the six-year-old children had done; they named the pennies, one penny, two pence, etc., and gave the total as one shilling and a penny.

Binet's Eighth Test for Seven-year-old Children deals with their knowledge of the names of common pieces of money. His directions to the experimenter for carrying out the test are as follow :—

Place nine different pieces of money on a table, and ask the child to pick out a five centime piece, a ten centime piece, a half-franc piece and a five franc piece. Many young children, he says, only know the "sou" (five centimes or a half-penny). At six years of age, he says, scarcely any French child knows the four pieces of money, but at seven years of age the great majority of French children know them; nevertheless, he considers this the most difficult of all the tests classed within the seven-year-old group. Binet's "pass" standard allows no error.

Some modification, of course, had to be made to render the test suitable for English children. For, in the first place, we had, of necessity, to use English money. The following nine coins were chosen : A farthing, a half-penny, a penny, a three-penny piece, a sixpence, one shilling, a two-shilling-piece, half a crown, and a five-shilling piece. (In my later work with my "Form for Testing Backward Children" the five-shilling piece was discarded). Having placed these coins grouped irregularly, but each one lying separately and flat on the table, the experimenter asked the child if he knew a half-penny, a penny, a sixpence, and a shilling. He was questioned as to his knowledge of these coins, and then asked to pick them out one at a time. Binet's "pass" standard was retained, that is to say, no error of any kind was allowed.

At four years of age four per cent. of our English children could select the four pieces of money as required. The children generally pointed to a half-penny for a penny, or to a penny for a half-penny. The majority of these children were in error with all the four coins.

At five years of age the number who could select the coins correctly varied much in the three schools. Only sixteen per cent. were successful (we must remember that *no* mistakes were allowed) in our intermediate school, in the well-situated school the percentage rose to thirty, and in the "very poor" school was higher still. These figures seem, at first sight, contradictory, everything seems wrong. The "very poor" school heads the list instead of being bottom, as it usually is, whilst the intermediate school is no longer intermediate, but last in order of success. The explanation is as follows : In the "very poor" school the practical exigencies of life make the children acquainted with coins at a very early age; in the well-placed school the parents, in many cases, show coins to their children as part of their education at home; the children of the intermediate school give less attention to coin-

age on both these grounds. If this test is to be used for very young children, before the use of coins is part of their regular arithmetical work at school, note must be taken of their home conditions when drawing conclusions from the results of the tests.

Some interesting psychological considerations appeared in the course of the work with these young children. It seemed to make a good deal of difference to them whether the coin was light or dark, silver or bronze. They did not greatly confuse pennies and sixpences, shillings and half-pennies. The *size* of the coin appeared to be a very poor determinant. For example, the two-shilling piece was very frequently pointed out as a sixpence; and the half-penny was very frequently selected as a penny. It was found afterwards that when the penny was shown to the children without being mixed up with the other coins, it was correctly named by the children. Readers of the Montessori Method will remember how strongly this principle of one thing at a time is insisted on (quite rightly in my judgment) in the method of teaching the names of the colours. I ought, however, to state that the removal of the *other* coins from the group brought little advantage in the readiness with which *they* were named, so that I do not want to press the principle beyond the evidence.

At the age of six years sixty per cent. of the children in our intermediate school selected all the four coins correctly; and once more the children of corresponding age in the well-situated school and also in the "very poor" school were found to be more proficient. The explanation offered is the same as that given in the corresponding cases with the five-year-old children. As usual, psychological interest attaches rather to the procedure of those who fail than to that of those who pass. With one exception, no six-year-old child gave the name of a silver coin for a copper one or *vice-versâ*. No child confused a half-penny with a penny. One child knew the names of three of the coins and could pick them out, but could not manage to find the shilling. Another child who selected all four coins correctly, voluntarily picked out and named half a crown; whilst another spontaneously pointed to a two-shilling piece and a half-crown and named them.

Let us not forget that little children rejoice in knowing the names of things and in picking out the things by means of their names, quite apart from any further intellectual relationship between the things themselves. I commend this observation to the extremists of the "phonic" school in Reading, who will not allow us to use the names of letters, and also to the extremists of the "literary" school of reading who will not allow us any reading matter specially prepared for progress in "word" knowledge itself. I have tried briefly to give the psychological grounds of this preference in young children on pages 56 and 57 of my *Problems in Education*, written and published fourteen years ago, to which I refer the reader for further discussion of the question.

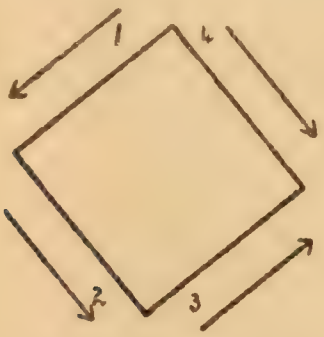
At the age of seven years the rise in proficiency in all three schools was small. It was, however, about equal in amount in all three schools, which, it may be remarked, preserved the same relative positions as in the five-year-old and six-year-old groups. But in the intermediate school there were children (whom repeated observation and experiment convinced me as being normal) who could not succeed with this test. But no child of this age confused the names of the copper coins with those of the silver ones, nor did any child confuse a half-penny with a penny. The general error was to pick out sixpence for a shilling and a shilling for sixpence. A few selected the two-shilling piece for the shilling. A considerable number of children of this age who picked out correctly the coins they were required to select went on voluntarily to the naming of other coins. For instance, one boy said, "Yes, and that's a two-shilling piece, that's a half-crown."

This test is, of course, one which is very susceptible of school teaching, and also—an unfortunate combination for us—is very

susceptible of training by the actual experience of life. But, where there is no teaching of the coins in school and no actual handling of the coins in daily life, as is often the case with children who attend "poor" schools, the test is not suitable for seven-year-old English children, though, according to Binet, it is a seven-year-old test for French children. Consequently, to be on the safe side, I have, on my *Form for Testing Backward Children*, placed it among the eight-year-old tests.

My next article will deal with Binet's tests for eight-year-old children.

NOTE.—In the previous article Fig 2 was wrongly drawn. It should have been thus:—



The Cultivation of the Sentiment of Solidarity in the School.

By G. SAPIENZA CASTAGNOLA.

Translated and Abridged by PROFESSOR C. R. CHAPPLE, M.A.

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The school completes the education of the home; it ought therefore by means of a rational culture to co-operate in the development of the sentiment of solidarity which is so powerful an element in human nature. In the International Congress of Education (Paris, 1900), in the discussion of the subject "Solidarity in the School," Bourgeois repeated a thought of Angiulli when he affirmed that "The social problem is, in its ultimate analysis, a problem of education." The school ought necessarily then to guide to its end the sentiment of human solidarity; it will succeed in this by means of direct instruction in social education, by means of the school life with its diverse subject matter of instruction, and by means of its subsidiary and after-school activities.

Buisson fears the insufficiency of direct instruction and sees in it a danger for moral education, but the objections pointed out by Buisson will be dissipated by the tact and sense of proportion of the master, who, if he is skilfully prepared by the training college, will be able to stem the influences of groundless theories and to assign to them their proper value.

Social education should give precision to ideas and awaken sentiments. The principal idea is that of the equality and fraternity of mankind, in the family, in the fatherland, and in humanity; a further idea is that of the debt owed to previous generations. The first sentiment which should awaken will consequently be the social, from which proceeds acknowledgement, gratitude, benevolence; the second will be that accompanying the desire for knowledge, from which proceeds the love of learning—individual perfection and elevation being necessary for the economic, intellectual and moral betterment of society. The solidarity of which the child ought to have a clear idea implies the notion that human association is rational, voluntary, consciously pursuing the realisation of justice and right. Direct instruction is contained within these limits, and all this will be a small matter without the manifold educative activities of the school curriculum and life.

The reading of selected passages of prose and verse under the skilful and enthusiastic guidance of the master will animate the idle, awake the apathetic, encourage reflection and reasoning, and determine sentiments and ideas whose results will be the ever clearer and more suggestive concept of human solidarity as a law of life. The teaching of mathematics, apparently so rigid, cold and foreign to the growth of sentiment, can, if well directed, be an aid to the sense of thrift and of individual and social foresight. The teaching of science will bring home to the child the actualities of life, will

make it live in the din of factories and machinery, and will cause it to understand the greatness of our debt to the thought and fruitful study of past generations—without Volta, no Marconi. The wise conduct of all the other branches of instruction will strengthen and fructify more and more the concept of human solidarity.

Further, the life and government of the school will furnish the most fitting surroundings for the cultivation of the sentiment of solidarity. There what interests one child interests all. It is the office of the master to watch over the opportunities for the development of sympathy—such occasions as benevolence to a poorer comrade at the meal hour, visiting and helping the sick companion will create the sentiment and the habit of disinterestedness. By the law of association of sentiments, given the first act of solidarity, there will grow around it all the other sentiments (the common interest, the general good) which are naturally derived from it.

There still remains the question: How should the government of the school be ordered so as to obtain effectively school solidarity as a means of discipline? All educationists and thinkers in France and Italy agree in this: "Too many punishments, too many rewards!" The school gives too great importance to the spirit of rivalry and competition from whence proceeds egoism. Disciplinary measures in actual use are therefore dangerous from a moral standpoint. Let us do the contrary. We will consider the child as a member of a jointly responsible body, its class. No personal reward, punishment, or classification, but instead collective rewards, punishments, and classifications.

The class will be praised or blamed, rewarded or punished. Collective punishments will bring about confession of fault; the blameworthy pupil will not desire that all his companions shall be punished for a fault for which he is responsible. In this way also the disciplinary solidarity of the school will be the advantageous image of the ways of nature and society, with all their just and unjust consequences.

Buisson objects, "What a great risk! This principle of collective sanction is one of the most disquieting in existence! Let there be collective disciplinary measures when there is collective participation—everyone is agreed about that. But let that only be collective which is naturally so. And here are things which are not so:—conscience, duty, and moral individuality."

But the school should be the reflection of society, in which all benefit by the efficient action of the government, as all suffer from its errors and its inefficiency; in the life of the school the consequences of deeds good and bad should spread.

The good conduct and the successes of individuals increase, the evil conduct and the failures of individuals decrease the reputation of the whole school—hence the necessity of fixing the idea of collective responsibility in the minds of the children. If a sum is well done, a lesson well known by the majority, the common fund will gain marks. For personal classifications will be substituted classifications by groups, in games as in written and oral tasks. The collection of all the scholars is thus considered as a moral individuality which is rewarded or punished according to the average of successes and good conduct, of failures and faults. The more intelligent will have an interest in helping the weak, who will obtain strength from the counsel and help of the better. Thus will disappear the privilege accorded to the stronger intellects, and all occasion of jealousy and envy—"All for each and each for all."

A rational method of government can also be obtained by associating the pupil in the maintenance of order and good conduct. The English, Americans and French have striven, by introducing greater liberty and independence into the school, to inspire a living sentiment of responsibility and solidarity. They have endeavoured to associate the whole school with the function of discipline by the election of heads and prefects whose charge it is to maintain the established standards of behaviour.

Moral mutuality is thus introduced into the school, so that if a pupil is rebellious

and vicious, careless in the performance of his duties, ever running into fault, his fellow pupil watches over him morally, warns him, and prevents his transgressions. The better ones protect the morally weak, and the child is accountable to his fellows for his lapses from the obligations of solidarity. If this conception of discipline should become more general in our schools, there would come about a transformation in our habits, and the children would enter life with a more exact idea of the duties of joint responsibility. The school is the place where the reform of behaviour must originate.

Not only must we influence the children by means of the instruction and discipline of the school, it is also necessary to interest their activities in institutions of joint liability in order that they may be able to combat the inveterate and obstinate prejudices of the communities wherein they dwell—the lack of trust in economic and social laws, for the operation of which the individuals have not been educated, and for which the school did not prepare them while young.

Institutions of joint interest and responsibility, which may have the character of co-operation or the character of mutuality, find ample application in school life. Their sole, essential object is the betterment of the conditions of existence among the members according to an ideal of justice. Here exist neither benefactors nor beneficiaries—not humiliating charity, but self-help and reciprocal obligation.

Solidarity, either in a co-operative or a mutual form is not that assistance which implies charity. Charity is an ever-present necessity of life; there will always be unfortunate beings, the weak, the conquered and the forsaken in the battle of life. Solidarity, on the other hand, is mutual or co-operative assistance; there is in the latter form a contract of strict reciprocity which converts it into a commercial operation; in mutual assistance, on the contrary, strict reciprocity is excluded and in this consists its educative value. A member may receive more than he gives and many give without receiving; this does not take place in co-operation, where rights are derived from the extent of the amount added to the common stock. In mutual help there is a mingling of the egoistic and the altruistic sentiment which is not met with in co-operation, properly so-called, wherein the prevalent idea is that of individual welfare.

In mutual help interested and disinterested considerations blend; egoism and altruism are converted into a synthesis of human solidarity, bound together in a community of necessities and aspirations united and sympathetic. All for each and each for all, the interest of the individual and of the community; and as the child sympathises with its fellows, so the youth and then the adult should rejoice in the gladness of others, should sorrow in their grief, and should put forth every effort to further their joy and prevent their pain. Whoever has the direction of public education, should foster the development of institutions of joint responsibility and interest, which should apply and realise the idea of education in solidarity. Amongst such institutions the following are the principal:—

1. School Friendly Societies. These have as their object a double action: provision for the future and mutual help. These ideas penetrating into the school, work upon the noblest feelings of the child and uplift its will and thereby its conduct. Individual welfare is united to social welfare, and does not depend upon humiliating and haughty charity, but the charity which the child offers to itself and is the fruit of its own efforts, its own work. In the last ten years school friendly societies have been introduced into Italy in various places, and propaganda in their favour by enthusiastic friends of education and by political personages resulted finally in the Raineri Act of the 17th July, 1910. Members can contribute small sums, and when the annual contribution reaches three lire the State gives a reward of fifty centimes annually. Members must not be less than six nor more than twelve years of age, but after the latter age they can continue their deposits. If they are children of working-

men they are transferred to the "Provident Fund for the Old-age of Workers"; otherwise they become participants in the popular life annuity securities, provided by the same Provident Fund.

The objects of a school friendly society ought not to be restricted but varied; not only help in case of illness, a doctor and medicine, but also funeral expenses; not only material necessities, but also books, which give enlightenment to the child and attach him to the school; and further, also, loans of honour. These loans ought to be made possible, thus educating indirectly but efficaciously that sentiment of honour which is the foundation of human dignity.

A member leaves to enter upon an apprenticeship; he requires a small sum for clothes, tools and the expenses of the journey. The friendly society fund gives him the necessary sum. Later when he is in a position to do so, the money lent will be returned with interest. In this way children and families will become interested in the work of school friendly societies, the people will attach itself to an institution whose benefits are immediate, the investment of funds will continue as a pleasant remembrance of a first social help, and parents will transmit to their children as a precious heritage their affection for the principle of school mutuality, which will thus find natural and efficacious increase of strength.

2. School Canteens. In France in some sufficiently poor communes where the means at the disposal of the authorities are insufficient to provide for school meals, there exist "school canteens" which from September to May give soup at mid-day to all children who desire it. Each pupil brings regularly his portion of vegetables, potatoes, kidney beans, dried peas, cabbages, carrots, onions; all quite clean and ready for cooking. A saucepan and ladle, a table service and a plate for each pupil, to be cleaned by himself, suffice for utensils. To cover expenses of fat for the soup and of heating, each consumer contributes from 15 to 25 centimes per month.

3. The Home-Furnishing Club. This is an institution which owes its development to the spirit of solidarity in France. In some girls' schools pupils and ex-pupils from 12 to 20 years of age meet once a week in the covered garden in summer, in the school in winter, and work together in the making of the future bridal equipment. The elders make the measurements, cut and sew, the younger girls help. The acquisition of materials is made possible by a monthly contribution of 25 centimes. Sometimes lady patrons, who do not disdain to work with the daughters of the people, help in the task and thus work successively with all and for all. On the eve of the marriage of any of the members diligence increases and everything possible is done to bring the total of household linen up to a hundred pieces.

4. Societies of Ex-Pupils. M. Pétit, Vice-President of the French Education League stated (17th Dec., 1912) that "the number of student societies existing today in France is about 6,570, of which 1,960 are of girls, with about 500,000 members and a fund of two million cents. They constitute a direct application of the principles of solidarity. The youth of the people in these after-school unions exercises itself in conscious application of the representative system, putting into action its combined wills for the purpose of mutual help. The association of ex-pupils which maintains and continues amongst the young the union initiated in the school is for the future citizen the true school of solidarity."

The "little associations," as they are called in France, are recreative and educative. They promote school festivals, excursions and journeys with studious objects, they establish recitation courses, shooting practice, classes for shorthand, modern languages, singing and dancing. Thus arise real schools of science, letters and art, promoted and maintained by the spirit of solidarity. Finally, they operate as true, practical schools of civic education. The election of members, the appointment of officers, discussions in meetings, administration of the funds of the societies, prepare the young to know their duties and defend their rights.

5. Solidarity in the school is strengthened by institutions for distributing cast-off clothes, cleaned and mended in the girls' schools, amongst the more needy children, and as in France, by school meetings for the distribution of toys old and new amongst the poorer children on Christmas Day, New Year's Day, and Epiphany. Further useful associations will be societies for the protection of birds and nests, for the protection of animals and useful insects and the destruction of the harmful, for the plantation, cultivation and protection of trees, and for peace—whose members shall agree to settle disputes by arbitration.

Finally, solidarity can be fostered by the care of the pupils in the adornment of the school and in the maintenance of cleanliness and order, by their zeal in the collecting of portraits, pictures of monuments and landscapes, utensils and ancient arms for the teaching of history, and minerals, plants, insects, etc., for the teaching of agriculture and science.

In all this the State can lend a helping hand, but the most powerful help is in the faith, the industry, the spirit of self-denial of the teacher who, if he is prepared for his task by a culture intelligent and proper to his task as a teacher, can conquer difficulties, overcome obstacles, expel traditional prejudices, and with his knowledge and his activity point the way of the triumph of human solidarity towards a life more complete, more beautiful, and more just.

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

Thus dislike and contempt enter into his heart. But he has to acknowledge the cane, and, poor trembling slave, he taxes his ingenuity to flatter and to hate, while biding his time for a means of revenge. No, I will not beat my child. As to my stick, come, poor old fellow, we'll go and beat carpets!

9. *Methods of rendering punishment effective and infrequent.* If solitary confinement, deprivation of meals and recreation, caning, public reproofs, are all to be given up, what weapons are left at my disposal? The only course is to obviate their necessity. Now, I can let you into the secret of having no need of heavy punishments; it is to see that they are never required. Then everyone is happy and good. *Prevention is better than punishment.*

If I can manage in such a way that the child always obeys me, I shall not have any acts of disobedience to punish; or, if he avoids any serious faults, I shall never have to treat him severely. My efforts must be directed to two ends : *the prevention of disobedience and the prevention of serious faults.*

The importance of the first object is evident. As for serious faults, they never occur quite suddenly and without some warning signs; they are generally preceded by little faults. These tendencies must be nipped in the bud if we want to prevent the more serious lapses which follow from them.

If we would check them, we must anticipate them, discover them beforehand so to speak, in the eyes and heart of the child. Nothing is more easy for a watchful parent. " Every fault," says Théry, " has its external symptoms, its particular expression. Obstinacy shows itself in the mulish look, anger in the flushed countenance, jealousy in the livid hue. Nervous twitchings in different parts of the face, inability to speak collectedly are all symptoms that parents must not neglect." These external signs are the more easily perceived because children do not know how to dissimulate, or at any rate only to a very slight extent. So, when I see a child beginning to give way to anger, I shall say to him, *" Be on your watch now, you are getting into a bad temper,"* or to another, who does not want to complete his task, *" Now, wake up, you are getting lazy, master it, see how quickly you can finish."* Thus, in appealing to the child's good-will, I shall prevent him from com-

mitting a serious fault for which he would have been obliged to be punished.

A little girl had had one or two hard slaps on the hand. There was a blue mark on two of her fingers and a spot of blood on another. With tears in her eyes, and looking at her poor hand, she said to her mother, " Why do you look down on me so? Why hurt me like that? *I would have done it if you had told me to* " (it was a piece of crochet which she had not finished). She spoke with sincerity in her tone and accent, and I felt the child's real dignity. I made a firm resolution that I would never punish again till after I had given a fair warning (that is to say, given my command or my prohibition twice at least).

A warning is not the same thing as remonstrances repeated time after time and followed by no result. How many parents there are who seem to have a passion for wearying everyone by their perpetual threats which are never carried out. Children are not so easily deceived; they soon despise empty words. It is right to threaten the child, that is, to warn him that if he persists he will have to reckon with us; it is right to encourage him to pull himself up so that he need not be forcibly checked; it is right and wise to grant him a delay, a time to reflect and make a good resolution, the honour of which will be his. The child must not be able to say, " I did not know." But as soon as he does know he must act, or else it is for us to act immediately.

If the threat does not succeed, it must be put into execution. How many times, do we not, blinded by anger, utter words which raise a laugh because they are so foolish, or which cause fear? The best warning is that which is uttered quietly and calmly : " *If you continue to do that, you will make me angry.*" The appeal is thus made to filial affection instead of to fear. With certain dispositions, it is possible to make an appeal to self-esteem, to say, for instance, "*What, surely you don't want to be threatened?* " Such a remark at once reaches a tender conscience. The child obeys immediately, saying to himself —and ready, too, to say aloud—" I give in, but it's not because I am afraid but because I want to."

The above are some ways of preventing serious faults. But in spite of all our precautions, the child will doubtless fall now and again; it would be unreasonable to expect otherwise, if we know anything at all about child-nature. Still, among the faults he does commit, are there any which need not be punished? Note that we often consider anything that disturbs us to be a fault, simply and solely because it does disturb us. Nothing is more illogical and unjust. To make a noise, to jump about, and so on are not crimes. A child has need of movement. Moreover, I never attach any great importance to noise and high spirits, childish mischief, or even fits of silliness. All that will pass with age. I shall certainly not waste my time in efforts of repression admittedly hopeless. It may be right to see everything that goes on, but one ought not to *punish everything*. There is quite enough to do in correcting the faults which will not disappear of themselves, story-telling, stealing, etc., and to form the qualities which might not develop of their own accord, love of work, order, etc.

I send my son to fill a jug. He comes back, trembling and ashamed, he has broken it. There is no need for rebukes or contempt, both would be unjust and stupid. He must be consoled, he must be told that there are other jugs to be found, that indeed the shopkeeper will be very glad to sell another. The child will be relieved; he will probably shed a few tears and another time, when he has committed a real fault, he will be quite ready to receive my reproaches precisely because I have not punished him for an *involuntary* accident.

The child touches the clock in spite of my telling him not to. Tired of telling him about it, I give up warning him. At last, by pure inadvertence, he breaks the springs. I lose my temper and whip him. He ought to have been punished before; he is now sufficiently punished by the damage he sees he has done without my

giving him a whipping, which will have no other effect than to make him forget all about his fault because he will think of nothing but his pain! It is the *disobedience* that necessitates punishment, not the *consequence* of it.

A little girl caught in the act of stealing something through sheer greed, cried out in terror, "*I won't do it any more.*" All the same, she was slapped soundly. Was not her mother wrong? She ought to have been satisfied for the moment with the voluntary promise, and to have reserved to herself the right to act more severely, if the child failed again. Such a mother forces her child to this reasoning: "What is the use of trying to be good?" A good resolution is not likely to be kept if it is possible to put that question to oneself.

In how many ways are children often made to suffer unjustly when they have done nothing whatever to deserve it? Under a pretence of correction, they often undergo physical and moral torture. They are told *to keep quiet, not to move or talk,* as if noise and activity were not their very life. A child is in a bad mood. You say to him, "Be cheerful," as if you could command cheerfulness. If the child still goes on being quiet and dull, he gets beaten. A pretty way to make him cheerful! Another time, he plays some childish trick, the father looks at him angrily, speaks in a loud, threatening tone, and pretends to strike him. Is he not doing his duty in correcting him? A child accidentally falls down. "*Little goose!*" you say to him. Is that the right way to correct children?

Your little boy runs up breathless to bring you some news which he thinks will give you pleasure. He pours it all out to you, delighted to do you a little service. "You *do* look untidy," you say to him. Was this the moment to reproach him? A little girl took her mother a bunch of flowers which she had been to pick in the garden. In her joyful haste, she stumbled going upstairs, and dropped the vase in which the flowers were. The mother, hearing the noise, rushed from her room. She sees the broken vase and overwhelms with reproaches the child who had tried to give her an agreeable surprise. The poor child wept bitterly, without making any explanation. But she did not take flowers a second time to her mother. And this is how parents correct their children!

Suggestions for Study and Practice.

Economy of Time in Education.—In a review of the Report of a Committee of the National Council of Education published by the United States Bureau of Education (Bulletin No. 38, series of 1913), the reviewer says: "The specific conclusions of the committee...if one may attempt to summarise a summary, are: (1) That the practical and ideal demands of society require that the period of general education should be shortened by at least two years, thereby permitting specialised advanced training while the mind may still make the best use of it. (2) That by improving technique during the elementary and secondary period a shorter time-schedule would yield better results than the present schedule. (3) That the colleges should make their last two years university years. (4) That further study and report upon the problem is needed. The Committee closes by proposing the following age scheme: elementary 2-12, secondary 12-18, these being two divisions, one of four and one of two years; college from 18-20 or from 16-20; and university (graduate or professional school) from 20-24."—F. P. Keppel (Columbia University), *Educational Review* (U.S.A.).

Seguin's Physiological Method of Education.—"The principles of the physiological method can be expressed in the following propositions:—(1) Educating the mind through perceptions instead of by pre-arranged reasonings. (2) Considering all the manifestations of life as expressions of functions, and all functions as resultants from a certain organism, we set aside the scholastic instruction of mind and matter, intellectual faculties and physical func-

tions. (3) If we could take hold of an organ we should be able to make it perform its functions. From this starting point we build up our means of educating the functions. (4) The organs of sensation being within our reach, and those of thought out of it, the former are the first we can set in action. From this selection (nearly a discovery, since it becomes the basis of an important part of the method) results another aphorism : (5) The physiological education of the senses must precede the psychological education of the mind."—*Seguin and his Physiological Method of Education,* by H. Holman, M.A.

The Selection of Mentally Defective Children.—"It seems to us that the selection of defectives calls for three varieties of experience : that of teachers, of doctors, and of psychologists. We shall proceed to indicate the services which these various persons may render...The duty of making the first selection among the school children and indicating those who are suspected of being defective belongs partly to the teachers and partly to the school inspectors, whose respective rôles, it seems to us, can easily be defined. ...In the pedagogical [and psychological] examination the inspector should exercise a measure of control. It is he who sets the teachers to fill up the schedules, who interprets the returns, and estimates their value...[As for the doctor :] It is not his business to select the abnormal from the normal. But from children picked out as abnormal he will differentiate certain types and prescribe certain measures with regard to their care and treatment."—*Mentally Defective Children,* by Alfred Binet and Th. Simon, M.D., translated by W. B. Drummond, M.B., C.M., F.R.C.P. (Edin.).

General Intelligence and Play Ability.—"Conclusions: (1) A definite correlation exists between play ability, as shown in group games, and general intelligence as estimated by the teacher or from the form positions for the year. (2) There is a small positive correlation between play ability and age. (3) Social position, involving as it does 'the tradition of group games,' seems to have little effect on the results. (4) Sex seems to make little if any difference in the correlation between play ability and intelligence. (5) Practice seems to have a levelling-up effect, while familiarity with the game for a longer period seems to produce little change in the correlation with intelligence. (6) The correlations obtained when the groups are analysed fit in with the results obtained by independent observation and suggest that intelligence goes with good play, and lack of interest in games with poor ability. (7) A definite motor factor exists which is common to play activity and the various tests" [crossing out letters, putting rings round groups of dots, crossing out dots so as to make a given pattern—five tests in all]. —*M. Jane Reaney*, "The Correlation between General Intelligence and Play Ability as shown in Organised Group Games," *The British Journal of Psychology*, September, 1914.

The Child-Study Association and the Constituent Societies.

The London Society.—The following lectures have been arranged before Christmas, 1914 :—

October 29th. *After Care of Mental Defectives.* Miss Evelyn Fox, Hon. Secretary Central Association for Care of the Mentally Defective.

November 5th. *Classification of the Deaf Child for Educational Purposes.* P. Macleod Yearsley, F.R.C.S., Eng.

November 19th. *Development of the Practical Imagination in Children.* T. Percy Nunn, M.A., D.Sc.

December 3rd. *Self-Expression through Language with Older Children.* Margaret Corner, M.A., Dunelm, Hebrew Scholar and Dean's Exhibitioner, M.A., Lond., Fielden Research Scholar.

The Lectures are on Thursdays, and begin at 7.30 p.m. They will be held at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W. (quite close to Victoria Station).

Notices and News.

Professor C. R. Chapple has been good enough to undertake the translating and reviewing of a new educational journal—*El Monitor de la Educación Común*—in Spanish, with which we have arranged exchanges, and gives us his first contributions in this number.

Mr. T. G. Tibbey has drawn up a very suggestive little pamphlet on *Child-Study Reading Circles* for the Extension Sub-Committee. It contains general guidance for the forming and conducting of such Circles, and a generous list of "suggested books." Single copies, 1d.; to Constituent Societies 50 for 2s. 6d., and 100 for 4s.

Reviews.

L'Educateur Moderne. July, 1914. Prieur and Co., Paris.

M. Edouard Peeters has a short article in this issue on "La culture de l'attention." He would make teaching attractive to such an extent that children would grow to attend as a matter of habit; this he would secure by continuing the method of the stories of the kindergarten and the nursery through the upper grades. School work appears to be envisaged as a constant succession of listening to teacher; there is no suggestion of cultivating the power to attend through the development of the child's interest in his own activities. Mad. de la Chapelle gives a brief and clear account of work done in Holland for old scholars between thirteen and eighteen years, by evening meetings during the winter and a week's camp in summer; the precise details given of the latter would be useful to any who might be planning such a thing. There is also a useful article on primary education in Spain.

L'Intermédiaire des Educateurs. Institut J. J. Rousseau, Geneva.

The chief article here is concerned with an inquiry into verbal imagination in children and adults which has been begun in the institute, and for which the directors seek the collaboration of others. Five tests are proposed, and all are suggestive. In the first a true and a false story are told without indication, and the pupils are asked to say which is true and which false. In the second, some fantastic blots are made with ink—a series of such is represented—and the subjects are asked to say what each one most resembles. In the third they are called upon to reconstruct a story from some elements given, e.g., "House takes fire; child alone; intelligent monkey; grateful parents; reward." In the fourth test nine pairs of words were given, e.g., light, tower; castle, rock; boat, fog; morning, voice; and around each pair of words three sentences were to be written to include them. In the test the subjects were asked to finish a story, of which the first half was given. It is noted that in the experiments so far made adults have not shown the same interest and willingness as children, who have often entered into them with enthusiasm, and it is suggested that this may be due to the fact that such tests are very unlike the ordinary run of school work, though certainly some are not unknown in schools, and that children's imagination is naturally more active, and less co-ordinated and limited by all the considerations that trouble our adult minds.

Archives de Psychologie. August, 1914. Williams and Norgate. 3 fr. 50.

M. J. Kollaritis has two articles in this issue, one a contribution to the study of dreams, and one dealing both with automatic movements and with the visual images which are part of our conception of unknown persons and places. He finds that such representation, when applied to unknown persons, may be determined by their style, should they be writers, by their views, by their nationality or even by the similarity of their names with those of other known people. Such imaginations take their place in his visual memory side by side with the visual images of people he knows. Like dream images, they sometimes quite suddenly disappear, though, on the other hand some fact learnt later, such as a photograph or drawing which conflicts with his imagination, may have difficulty in displacing it altogether. Commenting upon this later in the issue, Dr. Ed. Claparède states that in his own case the look of the name of the unknown person has some effect in building up his representation of that person, and notes how great novelists have used this fact effectively in the naming of their heroes. Further the fact that he himself has coloured hearing, each vowel having a quite distinct colour of its own, makes more definite the effect of the name in this regard; it is not surprising that he should have often found the reality very different from the image this aroused. M. Kollaritis' article is well worth reading.

Report of the International Congress for the Protection of Childhood, held at Brussels, 1913.

Brussels, so often the home of international congresses, has fallen on evil days since this was organised in 1913, and to the fact that Sir John Cockburn attended as the representative of the Commonwealth of Australia we are indebted for the official report, printed by order of the Australian Government.

The Congress, which was under the patronage of the King and Queen of the Belgians, had its spectacular feature in the form of a pageant, representing the stages of childhood, the various forms of neglect and exploitation, and the newer curative and remedial agencies which have been called up for their protection and welfare. The meetings were mainly given over to such questions as the functions and work of the children's courts, to which it was proposed that all judicial matters concerning them, even to forfeiture of parental authority, should be entrusted; with this went the work of the school doctor, the need for an extension of his activities, for an effective supervision of crêches and all institutions for the care of children and for a wide dissemination

through all classes of the principles of child hygiene. They discussed questions relating to the care of abnormal children, to the need for reliable statistics of child mortality, and passed drastic resolutions on the prevention of the use of alcohol in any form by children, going in advance of our English law on the subject; nor was pre-natal care neglected. Sir John Cockburn's contribution to the Congress took the form of an account of what has been done along similar lines in Australia, an account which is itself high testimony to the care which the Commonwealth shows its children.

Seguin and His Physiological Method of Education. By H. Holman, M.A. Pp. 314. Sir Isaac Pitman and Sons, Ltd. Price 5s.

The author claims that Seguin "was undoubtedly one of the world's greatest educational investigators and reformers, and [that the] principles and practices of physiological education are of the highest value to all kinds of teachers," but more especially to teachers in special schools—for whom they are primarily intended—and teachers of handwork. "His message to teachers was: *first educate the senses.*" As Pestalozzi sought to persuade educators to psychologise education, so Seguin urged them to physiologise it, since "*the physiological education of the senses must precede the psychological education of the mind.*" The author contends that no one can rightly understand the so-called Montessori method without first understanding Seguin's physiological method, for, as Madame Montessori herself admits, her work "may, in a sense, be considered as a summing up of the forty years of the work done by Itard and Seguin"—a scientific and original summary, which is much more than a summary.

The chapters of the book deal with: the life and work of Seguin; his definition of his method; his method of educating the muscles, nerves, senses, and intellectual powers; his method of teaching drawing, writing, reading, arithmetic, the metric system, natural geometry, natural history, cosmography, and practical grammar; his schemes for infants' and primary schools, and for garden-schools or outdoor education; his views on school doctors; his method of moral education, etc.

Mentally Defective Children. By Alfred Binet and Th. Simon, M.D. Translated by W. B. Drummond, M.B., C.M., F.R.C.P. (Edin.). Pp. xi., 180. Edward Arnold. Price 2s. 6d. net.

So much work has been done on the Binet-Simon tests of intelligence since they first appeared that this book is now chiefly of historical interest, and it is unfortunate that it was not published some five years ago. To those teachers, however, who do not yet know the tests the book will be both valuable and helpful, especially if read in connection with Mr. Winch's articles in this and other numbers of *Child-Study*. Though particularly useful to teachers of defectives, the tests need to be studied and applied by all teachers; for they do much more than help to the soundest classification of children: they help to the best understanding of children's natures and powers. The chief topics dealt with are:—Some features of the psychology of defectives; pedagogical examination by teachers to discover defectives; medical examination of defectives; the educational and social return of schools and classes for defectives.

The translation is well done, and there is a preface by Professor Alexander Darroch, and an appendix, containing the Binet-Simon tests of intelligence, by Margaret Drummond, M.A.

L'Enfance Anormale. May, 1914. Published at 23, Rue Claudia, Lyon.

In the May number is an article by Dr. Boulenger in favour of co-education for abnormal children. Drs. Adam and Gensollen contribute a study of a case of chronic alcoholism in a boy aged fourteen. Dr. Robert Foy concludes his article on stammering, and describes its treatment and cure by means of the "ductophone" and a "phonographe Edison perfectionné." M. Pouillot writes of the education of the deaf.

El Monitor de la Educación Común, Organ of the National Council of Education, Buenos Aires, July 31st, 1914. Thirty-second year of publication. No. 499. Home, 6 pesas (about 11s.); Foreign, 20 francs, per annum.

Herein the careful reader can see evidences of the educational energy of the Argentine, of progress accompanied by unsettlement and changing programmes, and by a desire to profit by the ideas and experiences of other nations. Seventy-two pages are devoted to educational articles, ninety-seven to detailed (but provisional) courses of study and time-tables for the training colleges—primary and secondary, thirty to editorial notes, notices of educational matters in the Argentine and abroad, reviews of educational journals and of books. Then follow 129 pages of the minutes of the Council of Education.

Señor Miatello pleads for conscientious observance in the schools of the idea of "The festival of the tree," recommending the plantation and preservation of trees on sentimental, educational, and utilitarian grounds. He points out that the central region of the Argentine is treeless, and discusses advantages, climatic and industrial, that would result from systematic tree-planting. He does not, however, deal with the question of the suitability of the soil of the pampas for the growth of trees. A Sicilian educationist, Sr. G. Sapienza Castagnola, writes on the cultivation of the sentiment of solidarity (see page 122) and an American lady, Mary Richards Gray, contributes an article on school gardens in Los Angeles, California. Sr. D. Feliciano Lijerón gives notes of a fifty minutes' lesson to children of nine to ten on the Butterfly. Method: intuitive; material: a live butterfly. Outline of procedure: 1, Description and analysis; 2,

method of reproduction; 3, method of life, food; 4, use; 5, story; 6, exercise: drawing of butterfly, essay. Dr. Lorenzo Inurrigarro gives an instalment on the effects of alcoholic intemperance, and finally there is a detailed syllabus in geography for the sixth grade in higher grade schools, drawn up by a number of class masters on the basis of the official syllabus in response to a request of the head masters in a certain district.

Among a number of points it is interesting to notice that the syllabus of the training colleges is obviously in a state of flux. For instance, agriculture is being omitted, and the teachers of the subject are being allotted to other subjects. The training college course (primary) lasts four years, and the secondary another three. The compulsory foreign language in the primary training college is French, in the secondary English. Secondary teachers are divided into teachers of science and of literature; both classes must study English.

Teaching Sex Hygiene in the Public Schools. By Edith B. Lowry, M.D. Pp. 94. Forbes and Company, Chicago. Price 50 cents.

Dr. Lowry deals in this small book with the "when, where and how the necessary instruction should be given," under the following headings: the necessity, method, caution, greater work, blindness of parents, story of life, girl, boy, well directed childhood, and co-workers. There are some useful hints in what is otherwise a rather wordy talk.

The British Journal of Psychology. September, 1914. Edited by Charles S. Myers. Pp. 126. Cambridge University Press. Price 6s. net.

This number is of special interest to teachers, and might almost be called an "educational number." The contents are:—*The Rôle of Repression in Forgetting,* contributions by T. H. Pear, A. Wolf, T. W. Mitchell, and T. Loveday; *The Psychology of Magic,* by Carveth Read; *Some New Reasoning Tests Suitable for the Mental Examination of School Children,* by W. H. Winch; *The Correlation between General Intelligence and Play Ability as shown in Organised Group Games,* by M. Jane Reaney; and *The Value of Distributed Repetitions in Rote Learning* by Nellie L. Perkins.

Mr. Winch's general aim in his investigation may be judged from a specimen test:—"Less than half the boys in a class had all their sums right, and less than half had no mistakes in dictation. Do you think there were any boys in the class who had all their sums right and also no mistakes in dictation, or do you not, or can't you tell? You must say why you think so." One conclusion he suggests is that "It would appear that axiomatic certitude may attach itself quite well to principles of reasoning which, later on, the persons who use them will themselves see to be erroneous."

Miss Perkins says: "The tables [of the results of experiments] indicate that the highest percentage of success is obtained by the use of one reading at each sitting, and, in general, the smaller the number of repetitions used at a sitting the higher the percentage of success. As to the interval between sittings, the most favourable interval seems to be between two and three days for cases in which either one or two repetitions are used at a sitting; for cases in which four or eight repetitions are used at a sitting, the longer interval of three or four days have a value equal to, or greater than, the shorter intervals."

The Eugenics' Review. October, 1914. Pp. 76. The Eugenics Education Society, Kingsway, London, W.C. Price 1s. net.

There is a very interesting article in this number, by Professor C. Spearman, on *The Heredity of Abilities.* He sums up thus:—"It appears that the future of research into the inheritance of ability must centre on the theory of 'two factors' ["innate differences of capacity and acquired differences of discipline"]. This alone seems capable of reducing the bewildering chaos of facts to a perspicuous orderliness. By its means the problems are rendered clear; in many respects their answers are already foreshadowed; and everywhere they are rendered susceptible of eventual decisive solution."

The Educational Times. October, 1914.

This journal continues to devote a fair share of its pages to articles on purely pedagogical topics. This month contains *Sane Sex Teaching* (continued), by Dr. C. W. Saleeby; and *Montessorism in Secondary Schools,* by Norman MacMunn. Other articles interesting to teachers are:—*Education at the British Association,* by Professor H. Bompas Smith; *Careers for Girls: The Profession of Medicine,* by Dr. Jane Walker; *Exercise for Teachers and Others,* by Eustace Miles, M.A.; and a copy of the letter on *Education and the War,* by the Rt. Hon. Joseph A. Pease, addressed "To my Colleagues in the National Service of Education."

There are many suggestive hints in Mr. MacMunn's article, and there is also far too much of excess in his enthusiasm for the so-called Montessori principles. He believes "that for a child work and play are precisely the same thing in essence, and that in practice we can always turn work to play or play to work by varying the pace at which either is pursued...The only point on which I stand firm is the view that the sole solution of the problems of education lies in the free self-governing school."

Publications Received.—*Journal of Education; Educational Times; Educational Review* (U.S.A.); *The Journal of Educational Psychology* (U.S.A.); *The London Teacher; The Bulletin of the American Institute of Child Life* (U.S.A.); *El Monitor de la Educación Común* (Buenos Aires); *New Lamps and Old in the Nursery,* by L. H. M. Soulsby, Pp. 31, Price 2d. net (Longmans); *Nancy,* By Ada Wrightson, Pp. 91 (H. R. Allenson), Price 1s.; *Mothercraft for School Girls,* by Florence Horspool, Pp. xix. 57 (Macmillan), Price 1s. net.

Child-Study.

The Journal of the Child-Study Association.

Vol. VII.—No. 8. DECEMBER, 1914.

Intensive Child Culture. III.

By Sir James Crichton-Browne, M.D., LL.D., D.SC., F.R.S.

If it could be shown that "petits poussins" can, under an electric stimulus, be grown at double the usual rate, thus doubling the output of the chicken farm and halving the food bill, their submission to that treatment, involving no suffering, would be a most commendable and remunerative procedure, as the object in their case is simply to fit them as rapidly as possible for the food market; but in the cases of babies and children, who have, it is to be hoped, a long and varied existence before them, electrical experiments, even if it could be shown that they stimulated growth and quickened the wits, would not, I think, be justifiable. They would be too risky in their performance and too problematical in their results. Lemstrom found that while artificial electric fields and currents are, generally in the case of strawberries and raspberries, highly beneficial, shortening the time of ripening and increasing the yield, they were sometimes highly injurious, especially during bright days, unless abundance of water was provided. The chicken experimenter has also discovered that it is of the utmost importance that the rates of current to voltage, the frequency of the oscillations, and the quantity of electricity employed should be carefully adjusted, both to the dimensions of the culture-house and the number and age of the birds, as too strong or too frequent application is always harmful.

It is clear that babies and children in their nurseries and schoolrooms might be injuriously affected by electrification, and that a heavy price might afterwards have to be paid for any immediate spurt of growth. Intensive cultivation in the case of human beings is, in my view, always to be deprecated. "The mills of God grind slowly," and any attempt to speed them up is apt to damage the machinery. If an electrical stimulus in childhood started an overgrowth which was continuous, it would almost inevitably bring with it some of the phenomena of failure of development. The popular impression that men of excessive growth are more sickly and have less stamina and mental capacity than men of average size, is probably correct, though the exceptions may be numerous. But if, on the other hand, the electric stimulus in childhood induced a mere temporary acceleration of growth it would not unlikely be followed by infantilism or an arrest of the development of the body in one of its progressive stages, analogous to what we see in slum children, the victims of insanitary environment or of toxæmias of various kinds. And the earlier the age at which electrically stimulated growth occurred, the more disastrous would its consequences be likely to be, for the rate of body growth, like that of brain growth, is highest at the beginning of life, and gradually diminishes as it goes on.

From the age of zero to one year, the child is able to increase its weight by two hundred per cent., but from the end of the first to the end of the second year by only twenty per cent., and thereafter it fluctuates in the neighbourhood of ten per cent. per year until the age of thirteen. At fourteen or fifteen there is an increase, and then the decline goes on again, and slowly we see the growth power fading away. To accelerate growth forcibly at the period when it is already most active, would in all probability be to cause a divergence in development, and the electrified

baby would therefore be in greater jeopardy than the electrified child.

In my judgment we should not at present entertain any proposals that may be made for electrical experimentation on children, and such proposals are not unlikely, in view of the misrepresented Swedish trial. We owe to Sweden an excellent system of physical culture, excellent in itself and as a factor in education, and are therefore favourably disposed to any lead she may give us in human culture, and there is for the moment amongst us a fetishism of electricity and radium. What may not devotion to them accomplish? A sheep has been electrified with a view to increased production of mutton, and a race-horse to convert it into a Derby winner. We shall perhaps before long have advertised electric baths for infants, and electric apparatus generating a high voltage, in which, as in the baby-jumper of former days, the infant may be encoiled, and schools in which electrification of class-rooms is strictly attended to. But, as I have shown, Sweden has no message for us on the subject of electricity and education, and the prudent course would seem to be to trust to natural electricity in its ordinary unobtrusive operation, varied by occasional thunderstorms, leaving the artificial employment of it alone, except when in certain morbid conditions it is medically prescribed.

Heliotherapy. Let us leave our nurseries and schoolrooms unwired, but flooded as much as possible with that light about the beneficial influence of which on growth there can be no question. Babies and children in the past have suffered largely from light starvation. One of the evils of the slums, though not perhaps the major one, is their duskiness; one of the salutary features of the forest and open-air schools is their luminosity. But again I would say that it is natural light that we must diligently seek and ensure, not artificial modifications of it, such as faddists may recommend. There is a tendency at present to lean on the rays of short wave-length, at the blue and violet end of the spectrum. The lethal effect of these rays on bacteria and their spores is well known, and has been utilised by Finsen in the treatment of lupus, and therapeutic value has lately been claimed for them in the cure of disease. These rays have a difficulty in getting through our atmosphere and are much more abundant at high altitudes than at lower levels, and so a sun-cure at an elevation of 6,000 feet has been inaugurated in Switzerland for the benefit of delicate and diseased children.

At that height a large proportion of the solar light has not been intercepted or absorbed by our air jacket, and the violet and ultra-violet rays are in full force. By exposure to sunlight at that elevation it is found that living tissues do not undergo septic processes, and that a markedly beneficial effect on general health is secured where that has been impaired. Professor Roget, of Geneva, lectured in London on the sun cure a fortnight ago; the most striking feature of his demonstration being the paradoxical association of nudity in the snows of winter with the rays of a burning sun as a curative agent. His photographs were certainly a revelation to the uninitiated. They showed large parties of boys and girls in all stages of disease, stark naked, being restored to health and recovering the use of their limbs under the benign influence of the Alpine sun. To look on these photographs was to recall the tribes of niggers in Equatorial Africa, doing civilised work out of doors under the direction of missionaries, with which we are familiar in Sunday-school magazines.

The boys and girls subjected to the sunlight treatment who work and play in the snow in a state of nudity, or lie naked on their beds fully exposed to the impact of the sun's rays, show promptly, Professor Roget says, a change in the colour of the skin to a ruddy, healthy brown, with an increase of muscular energy and general vivacity, while any tubercular sores they may suffer from dry up, the diseased tissues crumbling off, and a new cell activity setting in.

It is impossible to doubt that some striking results have been obtained by the

new school of which Professor Roget is the protagonist, and that sunlight highly charged with blue-violet and ultra-violet rays has been instrumental in securing these results, but it is to be remembered that other hygienic agencies have been co-operating with the sunlight. The children have in many instances been removed from bad homes and placed in sound sanitary conditions. Their personal cleanliness is attended to. They are breathing a pure, dry, dust-free air. They are having abundance of nourishment of the best kind with regulated exercise and plenty of rest. That tuberculous children would improve anywhere under such conditions is certain, that their improvement is hastened by the unfiltered sunlight is probable, but discrimination should assuredly be exercised in exposing some tuberculous children naked to a very low temperature, even in very dry air. To what is called the specialised solar treatment at high altitudes I somewhat demur. I cannot believe that advanced tuberculous bone and joint disease and glandular enlargements will be thus cured, as is affirmed, without any resort to medicinal or surgical treatment. The general health may be vastly improved, but there are local changes that the sun's rays cannot touch.

While recognising the value of the blue-violet and ultra-violet rays in certain morbid states, it is well that we should guard ourselves against regarding them as a panacea. I hear that in some American schools blue glass windows have been introduced, and the tendency amongst ourselves is certainly towards bareness and increased cutaneous exposure, in the young at any rate. Clothes have, perhaps, been overdone in the past, but there is a limit to their abandonment, and to tamper, except for decorative purposes, with natural light, Heaven's own mixture, is not likely to be salutary in the long run. What we have to do is to keep our light pure and unadulterated, and to prevent the window of the sky from being blurred and darkened by smoke, as it is at present, but about doctored light I should have grave misgivings. As with electricity, even if blue-violet light hastened child growth, it might stunt or distort child development.

Miss Dudgeon, of Dumfries, who is carrying on with the utmost scientific skill and caution a deeply interesting series of observations, tells me that in her experiments with the mercuric vapour lamp with tomatoes, she has found acceleration in germination of seeds and growth of plant, considerable increase of foliage and chlorophyl content, profuse development of flower-blossom; but in the fruit she has been disappointed. She had fruit ready for picking in April, but in size and quality they were not equal to fruit of a later date. She thinks it (the mercuric vapour lamp) would prove useful for bringing plants to fruit earlier, but for actual quality of fruit more heat and carbon producing rays are required. Just so, and for actual quality of fruition of life and character in children, heat and carbon producing rays in proper proportion are required, and any attempt to rear children in the blue-violet light might mean more loss than gain.

With reference to the cult of nudity, I am inclined to think that in a climate like ours it can be but of narrow application, and that without it the full nutritive value of light may be secured. Given the physiological properties of light, it might seem that we are unnecessarily depriving ourselves of them. In plants and the lower animals, the influence of light is exerted through the surface of a diaphanous skin; but how, it may be asked, can there be any influence of that kind on civilised human beings who practically live in darkness? They spend a third of their time in the darkness of night and the bedclothes, they hide themselves in murky houses, they cover themselves with clothing, so that even in those of us who are bald and who do not wear gloves, only about one-eighth of the surface of the body is directly exposed to light.

It is easy to understand, it may be said, that beneficial effects on health may be conferred by light where a special sunlight cure is carried on, as in these mountain schools in Switzerland or at Veldes, in

Carnola, where the sun cure has been long carried on and where the whole body uncovered is exposed to sun and air for several hours a day, and where the patients walk about in the Park in "native worth and honour clad," with the addition of a straw hat. But how under ordinary conditions of modern raiment can any effect from light be expected?

My belief is that even under these modern conditions of raiment light may be as efficacious as ever, but that it acts by a circuitous route. The whole history of evolution has consisted in the gathering up into special channels of functions that were at one time widely diffused. Touch and the senses of pain and temperature are still maintained over the whole periphery, although even they tend to concentrate themselves on specialised cutaneous areas, but taste and smell have been focussed on certain tracts of mucous membrane, and hearing has had constructed for it a mechanism of exquisite contrivance, and so the undulations (or shall I say corpuscles?) of light which in plants and lower animals exercise whatever powers they may possess on the organism through its whole superfices, in the higher animals and in man operate through the retina of the eye and its brain field. And not only have the originally superficial impressions, which were the rudiments of vision, been lifted up into the eye and raised to an immeasurably higher power, but with them have gone up in great measure the stimulating and nutritive prerogatives of light. These are exercised no longer on million multitudes of surface cells, but reflexly through an autocratic and unifying brain-centre. The light impinging on the retina, stimulating the nerve endings of the optic nerves, and initiating impulses which are conveyed to the brain, not only sets up sensations and visual ideas, but has a secondary trophic or nutritive effect. You must not imagine that the light gets no farther than your eye and brain; it goes all over you in spite of your clothes, and insinuates itself into every nook and cranny of your body. It quickens the circulation, increases oxidation, enriches the blood, and promotes nutrition in every tissue and organ.

Demonstrative proof of the widespread reflex influence of light has been given in the case of the amphibia. These animals (the tree frogs or chameleons, for instance) have naked and sensitive skins and complex and sensitive eyes, and they have, moreover, movable pigments in their skin which respond to light, giving rise to remarkable changes in colour, These pigments (black, yellow, red or green) are contained in cells called chromatophores, which can contract withdrawing the pigment from the surface, making it look pale; or dilate, bringing the pigment to the surface and giving it a dark or saturated tint.

These movements of the chromatophore used to be ascribed to the direct action of light playing on the skin, but the late Lord Lister, who was great as a physiologist as well as a surgeon, showed that they are controlled by light falling on the retina. He took a dark-coloured frog that invariably became pale when exposed to light, he placed a little hood of black cloth over its eyes and found that as long as the hood was held there the frog remained dark-coloured though exposed to bright light, but instantly became pale when the hood was removed and the light allowed to enter the eyes.

By a series of ingenious experiments, which time will not permit me to relate, Lord Lister showed that the regulation of this function of pigment distribution in the frog, which is closely analogous to the action of the cells in nutrition, is controlled by light impinging on the retina, and is carried on by all the nerves which have trophic functions.

Light operating through the eye, brain, spinal cord and nerves, appears to be a universal tonic, promoting nutrition and therefore growth, and thus increasing the resistance to disease. It begins to exercise its sway very early, for while a baby shows no signs of hearing until the third day, it exhibits sensibility to light five minutes after birth. In a fully matured new-born human infant, sensibility to light is present

either immediately after birth or in a few minutes, and light and darkness are discriminated in sensation while the pupil reflex is established. Some days after birth daylight or a brightly shining object excites cheerfulness, and from that time onwards light acting through the eye exerts an ever-growing influence on mental and bodily development. No doubt the action of light through the eye may be reinforced by allowing it to act also on a large cutaneous surface, especially in states of debility and anæmia, but plenty of light for the eye is the primary consideration. It is not only a pleasant but a wholesome thing to behold the sun.

The Practice of Child Forcing. I have referred to electricity and light in connection with child-study, because their proposed application in the manner adverted to illustrates what I regard as one of the dangers of the day, and that is, child forcing by whimsical methods. We are impatient and locomotive to an inordinate degree, and while we recognise and deprecate the evils of over-pressure and cramming and the futility of hastily acquired and undigested knowledge, we are eager to avail ourselves of any new expedient that promises to push on corporeal growth with the hope that mental growth may be thereby harmlessly accelerated. But "wisely and slow they stumble who run fast," and prematurity of all kinds is to be avoided. Mental precocity has a lamentable history. The infant prodigies who have been brought in with the walnuts and the wine to astonish the guests by their wisdom and attainments have generally ended in the feeblest of commonplace, unless indeed they have died young, instances of that other variety of precocity known in Shakespeare's time: "So wise so young they say do ne'er live long." Of this sort of precocity many painful and celebrated cases might be quoted—cases of singularly gifted children who have fallen victims to tubercular disease just when giving promise of marvellous achievements. Typical cases of this kind were those of Lucretia and Margaret Davidson, whose biography was written by Washington Irving, who died of consumption in early girlhood, leaving behind them poetical remains of great sweetness and some literary merit. A typical case, also, was that of Pet Marjorie, whose memory is preserved as precious for ever, like a fly in amber, because she lay in the fold of Sir Walter Scott's plaid, and sat on his knee, repeating to him Constance's speeches in "King John" till he swayed to and fro, sobbing his fill, and who died when seven years old after inditing letters that would have done credit to a woman of forty, and verses, of which the following, addressed to her nurse, is a specimen:

I love in Ida's bed to lie:
Oh, such a joy and luxury!
At bottom of the bed I sleep,
And with great care within I creep;
Oft I embrace her feet of lillys,
But she has gotten all the pillys,
Her neck I never can embrace,
But I do hug her feet in place.

But with children of this class, as well as with the diminutive saints whom we find enshrined in religious literature, it is always the same story: in the midst of their matin bloom they droop and fade, utter the portentous cry "My head! my head!" and sink under tuberculosis, or are snuffed out by some childish ailment from which their less gifted brothers and sisters escape. Pernicious precocity this may be called, to distinguish it from that forwardness of intellect which is only a sign of an inferior organisation. The children of savages, I need scarcely remind you, are precocious when compared with those of civilised races, and within the civilised races it is not the children who start soonest who go farthest. The advance in evolution and in civilisation has corresponded with a proportional prolongation of the period of dependence on parental support, and therefore, with an enlargement of the benign influence of family life.

I am inclined to think that some postponement in mental evolution is even now going on. A large amount of material I have collected goes to show that boys and girls of a century ago matured a little

earlier than they do to-day. Let me quote just one or two Edinburgh instances: Sir Walter Scott entered the University of Edinburgh when he was twelve years old and attended lectures on law and history. John Goodsir, the greatest of modern anatomists, entered the University of St. Andrews when he was thirteen. Lord Brougham, one of the most ably versatile of men, entered the Edinburgh University at fourteen, and contributed a paper to the *Transactions of the Royal Society* at seventeen. Sir David Brewster, a leader in modern science, manufactured a telescope at ten years old and entered the Edinburgh University, of which he became Principal, at the age of twelve. Sir William Hamilton matriculated at the University when he was twelve. Lord Kelvin entered the University of Glasgow in his eleventh year, and Dr. John Brown, that most genial of literary scribes, entered the Edinburgh University at fifteen. I am aware, of course, that at the time of which I am speaking our Scottish universities were very much high schools, but where to-day shall we at these ages find boys equal to enter a high school, profit by the tuition they give, and regulate their own lives? My impression is that the boys leaving Eton to-day at eighteen are distinctly more boyish than the youths at that age and under who entered the Scottish universities a century ago.

Dr. Benjamin Gould, in his classical work on anthropometric research, tells us that the younger generation of to-day in the United States tends conspicuously to surpass its parents in stature and physical development, and Professor Minot attributes this to better care of the infants at the period when growth is going on with such enormous rapidity. The better health of the mothers, who are better cared for and instructed, secures, he thinks, improved nourishment in the early stages of growth of their offspring. It is to be hoped that child-study in this country, by elucidating and enforcing the laws of healthy and well-balanced growth, bodily and mental, neither unduly expedited nor retarded, will conduce to the improvement of our next generation. Its aims are philanthropic, its methods are sound, it has already done good work, and assuredly will hasten the time when

> Oh! earlier shall the rosebuds blow
> In after years, those happy years,
> And children weep when we lie low
> Far fewer and far softer tears.

Binet's Mental Tests; What they are, and what we can do with them. VII. (*continued*).

By W. H. Winch, M.A.

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I preface my account of Binet's tests for eight-year-old children with a few words as to what the reader may expect to find in this article. I shall, of course, deal with Binet's eight-year-old tests; and it might reasonably be supposed, since we are now entering upon an age which decidedly belongs, not to infants' but, even in England, to senior departments, that I should at once leave the infants, whose work has hitherto been described, and pass on to senior schools. But at present I do not purpose doing this for the following reasons: Firstly, the work done in the infants' schools went beyond the seven-year-old tests. It is a misconception of the Binet tests to regard them as of such a nature that an adequate basis of grading exists in one year's tests merely. It is advisable, for example, to test seven-year-old children, not only with the seven-year-old tests, but also with those of some preceding and succeeding years. Consequently there is a good deal of work done in the selected infants' schools which has not yet been described.

Secondly, English schools are divided into infants' and senior departments, and the teachers of infants' and senior schools are naturally more interested in the work of the children they know best. On that ground alone it might be well to complete my account of the infants first.

Thirdly, I found that the question as it presented itself to teachers of senior schools

ran, "What can my eight-year-old children do; are they well graded?" rather than, "What are Binet's tests for eight-year-old children?" So, later on, I shall approach the question in senior schools from these standpoints; meanwhile continuing, for the present, a description of the tests themselves with a further account of what was done in the three infants' schools selected, namely, the "well-situated" school, the "intermediate" school, and the "very poor" school.

Binet's First Test for Eight-year-old Children is a test of Reading and Memory. Binet is well aware that this test cannot be said to be *extra-scolaire;* it undoubtedly concerns itself with school instruction; he, therefore, retains this test only *avec des reserves.* There is much to be said in practical educational work for a test which shows whether a child can learn. Not only initial endowment, but educability, the power to improve under instruction or training, is also of importance in grading children in their proper classes. But in my "*Form*" I have rejected this test altogether; its use in English schools is exposed to too many difficulties.

Our educationists and our teachers hold very varied views as to when a child should begin to learn to read. I am endeavouring to frame some simple experiments which teachers could use, with individual children, as a means of determining this issue; but they have not yet been sufficiently "tried out," as Americans say, to enable me to recommend them yet. The Montessori doctrines may influence teachers to begin reading earlier than has recently been thought advisable; but Froebelianism is against it. In any case, there is, at present, very considerable diversity of practice in English schools, and it is obviously unwise to use a test of school instruction for a particular age when, in one school, children may have been learning to read for several years; in another, perhaps, to take an extreme case, for only one. Accurate grading cannot be effected in that way.

However, the business of this article is mainly a description of Binet's Tests, and to an account of his reading exercise I now proceed. This is his test: I give it in French and render it into English afterwards:—

"Trois maisons en feu.

"Châlons-sur-Marne, 5 septembre.—Un immense incendie a détruit, la nuit dernière à Châlons, trois immeubles situés au centre de la ville.

"Dix-sept ménages sont sans abri. Les pertes dépassent 150,000 francs.

"En sauvant un enfant au berceau, un garçon coiffeur a été sérieusement blessé aux mains."

I am well aware that an Englishman cannot easily estimate the difficulty of a reading test in another language; but I must say that this appears to me very difficult French for an eight-year-old child to read and apprehend. And when we note Binet's "pass" standard, the difficulty seems greater still. The test contains fifty-three words, some of them of considerable difficulty, and the pupil is required to read it without error, and without spelling or stumbling; and in order to "pass," he must also read it at a certain rate. At the age of eight, he must read the fifty-three words in forty-five seconds, at nine years in forty seconds, at ten years in thirty seconds, and at eleven years in twenty-five seconds: but we must remember that it is primarily an eight-year-old test, though Binet gives the rates also at which older children should read it.

Further, in order to pass the test, not only must the child read quite correctly, but also must remember some of the facts. Binet divides the passage into nineteen sections, each of which is regarded as one fact. At seven years of age, he says, children very rarely remember two facts; but the majority can do so at the age of eight. To reach the eight-year-old standard he must remember two facts. Obviously, considerable modifications are required to make the test at all applicable to English children. I give first a rather literal translation:

"Three houses on fire.

"Châlons-sur-Marne, 5th September.—A great fire destroyed, last night, at

Châlons, three buildings situated in the middle of the town.

"Seventeen families are without shelter. The losses exceed 150,000 francs.

" In saving a child from its cradle, a hairdresser's boy was seriously hurt on his hands."

This passage obviously needs adjustment to English children, and finally we decided to use the following passage, a modification of Binet's :

" London, December 5th.

" Last night a great fire destroyed three buildings in the middle of the town. Seventeen families are without homes. The loss is more than £6,000. In saving a baby from its cradle, a barber's boy was badly burned on his hands."

This passage was printed on a piece of cardboard; the words were large and well spaced. Each child held the card in his hand in order to read it. The test, even in its modified form, was found very difficult for English children. It is, as I have said, a test for eight-year-old children, and there were no children of this age in any of the infants' schools in which these experiments were made.

But we are quite accustomed to find clever children of seven in infant schools who can read well, and it will interest English teachers to know what our younger children were able to do. In the " well-situated " school, the six and seven-year-old children attempted it; in the " intermediate " school and also in the " very poor " school it was tried with children of five, six and seven years.

In the " well-situated " school five per cent. at the age of six and twenty-five per cent. at the age of seven passed the test. In the " intermediate " school no child passed the test at any age. In the " very poor " school no child, of course, passed at five years; but five per cent. passed at the age of six, and more than fifty per cent. at the age of seven. But this was due to a non-rigid adherence to Binet's instructions; for example, the children were allowed to omit or miscall the number stating the loss.

My own opinion is that, except in specially well-circumstanced schools, or those in which reading is made a very special feature, it is rare to find a seven-year-old child who can really pass this test if Binet's standard be strictly adhered to. The following summarises the difficulties experienced by the children of the intermediate school which, as the reader will remember, was situated in a rather poor neighbourhood :

At the age of five years no child attempted to read the prescribed passage. The children looked at the print, and then looked up at the experimenter, and said nothing.

At the age of six also no child was able to read the passage as directed by Binet. Several children looked at it, and pointing out some familiar words, said, " I know that word, and that word." But others looked, and made no attempt to read. One girl read the passage easily, with the exception of " fifth " and " six thousand pounds." When asked to say what she had been reading about, she said, "Where there was a storm, and they burnt down the house. When the soldiers came to fight they burnt the little boy's hand." (This was years before the war). One boy read London, then said " London County Council," and got no further.

At the age of seven years the children *all* stumbled over the reading, and consequently failed. But the majority of them remembered " two facts " and even more. Some of the words were quite unfamiliar to the children, and they had to stop, either to spell them phonically or, where spelling was not necessary, to divide the words into syllables. Such words as " December," " families," " buildings," " destroyed," were treated in this way. By spelling phonically I mean the successive sounding (not the alphabetic naming) of each separate letter.

No child knew how to pronounce the " th " in 5th, and no child knew the meaning of the sign " £," neither could any of them read " 6,000." Some called it " sixty," others said " six hundred." Two children said " London County Council,"

ignored the month and the date and went on with " Last night," etc. Three seven-year-old children working in a Grade III. (b) class made no attempt to read. They looked at the print, then instantly round the room and said nothing.

I put all these details in evidence because I wish the reader to know what can and what cannot be done with this test in a very thoroughly efficient infants' school.

I have not yet cited the work of eight-year-old children; but I can say at once that, in the power to read, our children seem definitely behind the French. But on the other hand, though they could not read the passage satisfactorily, they appeared to remember much more about it than the French children. Binet says very rarely children of seven remember " two facts"; but our infants remember much more. The following are some of the accounts given by the seven-year-old children in the intermediate school :

1. There was a great fire in the middle of the town last night. The boy Barber (there was a boy named Barber in this class) was badly burnt on his hands, and they said they would give six hundred for saving the baby, and the baby was in its cradle.

2. A fire. A fireman saved a little baby from its cradle, and there were three buildings burnt in the town, and in the barber's shop there was a boy, and he had his hands burnt, and there were three thousand families out of their homes.

3. I read about a fire and it burnt a little boy.

4. I read about a fire, and a little boy got burnt on his hands, and a little baby got burnt in the night.

5. A fire : there was a baby nearly burnt, and a barber's boy was burnt badly on his hands, and seventeen families were burnt, and it was last night.

6. A fire : there was a barber's boy, and he had his hands burnt, and a baby was in its cradle. It happened in the middle of the night, five December.

7. About a fire in the middle of the night, and it happened in the middle of the town, and a barber's boy was burnt on his hands, and there were six hundred families out of their homes, and they saved a baby from its cradle, and the fire destroyed a lot of houses, and it happened in the buildings (there were rows of houses in the neighbourhood of the school known as " the buildings ").

8. A fire, and a boy got burnt and a fireman saved a baby. It was in the middle of the town. And I read about last night, and I read about a cradle, and a family. And there's something in the second row, nearly the last word. (Probably the boy meant the word " destroyed," but did not know how to pronounce it).

9. A fire, a little boy baby burnt his hands, and seventeen families were burnt. It was the barber's boy. It was on a night.

10. A fire : a little boy got burnt and seventeen families are without homes, and a little boy was saved. There were three buildings.

11. A fire and a barber's baby boy, and his hands were burnt.

12. A fire where a little boy burnt his hands, and a baby got saved. It was in the middle of the town in London.

13. About a fire, and a barber's boy got burnt on his hands, and a little baby got saved from its cradle, and the firemen came, and a lot of men and women got saved.

14. About London, some buildings and some men and a baby and a boy.

15. About a fire and a little baby.

16. About a fire, and a boy got his hands burnt, and a baby was in its cradle, and a fire engine came up and put the fire out.

17. A little boy, a baby, a cradle, buildings, a boy was burnt.

18. About a fire, and the barber's boy was burnt on his hands and the baby was in the cradle, and they saved a hundred pounds, and three houses were burnt, and they never had any homes.

19. About a fire and a barber, and a baby, and money, and the town, and the hand was burnt from the fire.

Quite obviously there are great differences between the amount and character of the above remembered accounts. Some of the children give little more than mere

enumerations of the persons and things mentioned; others give good descriptive and connected accounts. But how shall we mark them? This is how Binet divides his passage into " memory units " :

Trois—maisons—en feu—Châlons-sur-Marne—5 septembre—Un immense incendie—a détruit—la nuit dernière—(a Châlons trois immeubles)—situés au centre de la ville—Dix-sept ménages—sont sans abri—Les pertes dépassent 150,000 francs —En sauvant—un enfant—au berceau—un garçon—coiffeur—a été sérieusement —blessé—aux mains.

Binet says the maximum number of remembrances, a maximum never attained, is nineteen. The part of the text which is only a repetition is placed in brackets. If the English modified text is dealt with in a similar way, we arrive at the following :

London—December 5th—Last night—a great fire—destroyed—three buildings—in the centre of the town—Seventeen families—are without homes—The loss is more than £6,000—In saving—a baby—from its cradle—a barber's boy—was badly—burnt—on his hands.

This gives a total of seventeen units, and in order to compare our results with those of Binet we *can* mark with these units. But several of these divisions are clearly not *units* of memory. For instance, a child may remember " December " but not 5th; he may remember that the fire occurred at "night," but not "last" night; he may remember that there was a fire, but not that it was a " great " fire; he may know that the fire destroyed buildings but not " three " buildings; that it took place in the town, but not in the "centre"; that families were without homes, but not that there were " seventeen " of them. " The loss is more than £6,000 " is surely too complex a unit for young children, or even for much older ones. A child may remember that a " boy " saved the baby, but not that it was a " barber's " boy.

There is only one quite satisfactory method of marking substance memory exercises; we must follow the children. *Those only are real units of memory which appear or disappear in consciousness together.* On this basis I have worked out a system of marking substance memory exercises which I cannot describe fully now. I refer to it to show that I am not unmindful of the need of a better method of marking than the one cited above. But for the present, we *can* mark on units which resemble Binet's. And, as I have said, on his scale, as teachers will readily perceive, our seven-year-old children easily remember much more than *two* units, and that is true though they fail to read the passage in Binet's sense of the word " read."

Perhaps our eight-year-old children in senior schools are much more successful. We shall find that out later on. But as I have explained above, reading is far too much a pedagogical and too little a psychological function for me to place much reliance upon it as a mental test, and I have in my *Form*, as I have said, omitted the reading test altogether. Still, I am sure that teachers will like to see what is done under fair (not exhibition) conditions in thoroughly good schools. Moreover, it is a Binet test, and hence necessarily falls within the scope of these articles.

Binet's Second Test for Eight-year-old Children is a test in Counting involving money. He gives the following directions for carrying out the test : On a corner of a table prepare beforehand a little group of coins composed of three single sous (half-pennies) and three double sous (pennies). The coins must be near to, but not covering, each other. Show the money to the child and say, " Count this money for me and tell me how many sous there are altogether." The only precaution necessary is to so arrange the money that all the pieces are visible.

The difficulty of the test consists in the confusion of the value of the double with that of the single sous. Binet classifies the answers which are given by the French children as follows :

(1) Some children count quite correctly, commencing with the sous : 1—2—3—5—7—9 : that is to say, they add two for each of the double sous. (2) Some count correctly, but they say 1—2—3 and then

count one more only for each of the double sous. The second method is a failure, for no error is allowed and no second attempt is permitted, nor must the child, even if he counts quite correctly, take longer than fifteen seconds to do it. At seven years of age the great majority of French children can pass the test, and at the age of eight every child succeeds.

In carrying out this experiment with English children we used three halfpennies and three pennies. The coins were laid flat separately, but near each other, in a group, halfpennies and pennies mixed, but the coins did not touch each other. The experimenter said to the child, "How many halfpennies for this penny, and for this one and for this one? Now suppose we had all halfpennies, how many would there be?" We thought that Binet's directions were apt to be misleading unless it was made clear to the child that he was dealing with values.

To "pass" the test, the child was required to answer quite correctly, by counting or otherwise, within fifteen seconds. Binet says "Count"; but we had, of necessity, to allow for pedagogic methods which discourage counting at this age, except as a test of results otherwise obtained. After the child had given his answer, he was asked how he had found it out. The following is an analysis of the results and of the methods adopted by English children of the "intermediate" school:

At five years of age, eight per cent. were able to give the correct answer. They counted thus, beginning with the pennies: 1, 2—3, 4—5, 6—7—8—9. Forty-four per cent. of the children, as might have been expected, counted "six." Twenty per cent. said "three"; eight per cent. said "eight"; twelve per cent. said "twenty"; four per cent. said "ten"; and four per cent. said "four."

At the age of six very great improvement was shown; no less than sixty-eight per cent. gave correct answers. The successful children arrived at their answers by the following methods:

(1) Beginning with the pennies, they counted 1, 2—3, 4—5, 6—7—8—9.

(2) Beginning with the pennies; they counted each penny as "one," thus: 1—2—3, then added in the halfpennies, saying, 4—5—6, and returned to the pennies, counting 7—8—9.

(3) They pointed to the halfpennies and said 3, and those 2 (meaning one of the pennies) make 5, and those 2 make 7, and those 2 make 9.

(4) Two there, two there, two there, that's 6; 7—8—9.

(5) 2—4—6—7—8—9.

(6) 2—4—6, and the other three make 9.

(7) 2 and 2 and 2 are 6, and 3 are 9.

(8) 1, 2—3, 4—5, 6—9.

(9) 2—4—6—9.

(10) 2—4—6—7—8—9.

The common error was, of course, to count six, disregarding the difference in value between the pennies and the halfpennies.

At the age of seven there was, again, a very considerable advance: no less than eighty-eight per cent. of these children gave correct answers. They arrived at their answers in the following ways:

(a) Beginning at the pennies:

(1) 2 in that, and 2 in that, that's 4, and 2 are 6, and 3 are 9.

(2) 2—4—6—9, and that's fourpence halfpenny.

(3) 1, 2—3, 4—5, 6—7—8—9.

(4) 2—4—6—7—8—9.

(5) There's 2 halfpennies in that, and 2 in that, and 2 in that, and that makes 6 halfpennies, and three more make 9 halfpennies.

(6) 2 in there, and 2 in there, and 2 in there, that made 6, and the other three halfpennies made 9.

(7) 2 out of there, 2 out of there, 2 out of there, that 6—7—8—9.

(8) 2 and 2 and 2, that's 6, and 3 are 9.

(9) 2 and 2 and 2, that's 6; three twos are 6, and the other 3 are 9.

(10) 2 and 2 are 4, 4 and 2 are 6, 6 and 3 are 9.

(b) Beginning at the halfpennies:

(1) 1—2—3—4, 5—6, 7—8, 9.

(2) I said there were 3 there (pointing to the halfpennies), and 2 in there, that

makes 5, and 2 in there makes 7, and 2 in there makes 9.

(3) 3 and 2 makes 5, and that 2 makes 7, and that 2 makes 9.

(4) 3—5—7—9.

(5) 3, and 2 in there that's 5, 2 in there that's 7, 2 in there, that's 9.

In the next article I shall conclude my account of Binet's tests for eight-year-old children.

The Classification of the Deaf Child for Educational Purposes.

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The question of deaf education is a much wider one than at first sight appears. It includes more than the teaching of the very deaf: the so-called deaf-mute. It embraces, or should embrace, the whole range of deaf children, from the slightly deaf to the defective deaf, and, in order to make such education efficient, it must be based upon a sound classification. It is, therefore, the classification of the deaf child for educational purposes that I have chosen as my subject to-night. It is one which should interest not only teachers of the deaf, but elementary school teachers as well, and I hope to learn as much from the latter as from the former.

The practical classification of the deaf is the basis of efficient education, and by it, combined with early education, alone can be obtained the best results. What is meant by a practical classification has occupied deaf educationists for years, and I think that, by now, the matter has been pretty nearly thrashed out, although, possibly, the last word has yet to be said. My view of the deaf child is, however, wider than that which falls within the definition of the Act of 1893, because it embraces many children who are on the borderland, some of whom can be educated in the ordinary hearing elementary school. I would make any system of classification include not only the normal totally deaf and semi-deaf, the blind and mentally defective deaf, but also the child who is hard of hearing and the child who is very slightly deaf. In a word, I would make it embrace every defect of hearing, from the scholar who can be taught perfectly well in an ordinary hearing school, to the mentally defective deaf-mute who requires the most highly specialised teaching in an institution.

Deafness is a physical defect which is one of the most serious that can befall us, and it has been terribly neglected until comparatively recently. It is, moreover, a physical defect which has a great range of variation, hence the necessity for classification. Classification has been necessary throughout the whole educational system. We set out to educate the child and are immediately confronted with the fact that he must be classified. After much groping through dark ages, when the pedagogue was the man who had failed at every other calling, and the birch took the place of classification, the days of Squeers and Creakle, the child became roughly classed into normal, physically defective, and mentally defective. Then the second category had to be subdivided into crippled, blind and deaf; whilst the mentally defectives were grouped as uneducable idiots and imbeciles and educable mentally deficients. Pass from the general educationist and come to the educationist who is specially concerned with the deaf. No sooner has he started upon his labours than he is, in turn, confronted with the same necessity for classification; without which he can make no real progress in the work he has to do.

Now, to my mind, the scheme of classification of deaf children, to be efficient, should include every child who shows any signs of loss of hearing, be it ever so great or ever so small. It should be based primarily upon school medical inspection, and should divide the deaf into four groups: the slightly deaf, the semi-deaf, the very deaf and the defective deaf. Between these four groups there is no absolute line of demarcation; they shade

one into another. In the very deaf class is included the totally deaf and those with residual hearing (vowel hearing or for very loud speech close to). The semi-deaf should comprise those who are possessed of a greater degree of hearing, sufficient to give them a certain amount of residual or, it may be, natural speech. The slightly deaf can be divided into two groups of "very slightly deaf" and "hard of hearing"; it is with these two sub-groups that the greatest difficulty is often found. The educational methods necessary to the efficient teaching of the four primary divisions range from the various deaf schools and institutions to the ordinary hearing classes of the elementary schools.

For the present I will leave the slightly deaf and deal with the other groups.

The semi-deaf class includes those children whose hearing acuity for speech is four feet or less, a comparatively considerable amount of residual hearing when contrasted with the deaf-mute, so-called. Those who have only vowel hearing, partial vowel hearing, or hearing for very loud speech close to are not included. The range of hearing in these semi-deaf cases is wide, and the factor of mentality is of great importance. The children included in this class will fall, therefore, into two groups: the better cases and the worse cases. The former, scholars of good mental calibre, fair residual hearing, and residual speech (possibly, in some cases, natural speech), would be educated best as permanent units of special classes under teachers of the deaf. Probably it would be better that they should not be permitted to mix with the very deaf, and that precautions should be taken to prevent them from what I have called sign contamination, that is to say, picking up the use of signs from the very deaf to the detriment of their oral education.

The worse cases, with more marked degrees of deafness, of doubtful mentality, or with defects of speech, are on the borderland between the better cases of the semi-deaf and the very deaf; with them, as with the very deaf, no modification of ordinary school methods is possible. They require education in a special school for the deaf, the study of each individual child being of paramount importance. The extremist in oralism will wish to educate them all on the oral system. The fanatic in signs would try to reduce them to a painful dead level of finger spelling and signing; condemned to perpetual dumbness, a class apart from their fellow creatures. Both are wrong, both are to be condemned, although the extreme oralist is entitled to sympathy because he wishes to raise the deaf child to speech, whilst the extreme advocate of signs and finger-spelling, and nothing but signs and finger-spelling, would condemn him to everlasting dumbness. I believe myself that oralism is the most important of all systems of deaf education, and that, given that the child commences his education early enough, its success is assured in the majority of cases. But there are many factors to be considered; mentality, health and regular attendance amongst the most important.

But it is the *child* that has to be studied, not the system, and as long as I live it will be my endeavour to insist upon this; if not with the eloquence and unrivalled experience of my colleague, Dr. Kerr Love, at least with equal sincerity and ardour. If the child shows progress under the oral system, then push him along that line heart and soul, and protect him from every influence that may run him off its rails. If, from any of the reasons that will thrust themselves upon us sometimes, he is a failure at oralism, the sooner it is acknowledged after fair trial the better, so that he can be educated upon some other system. If his case falls between the two, then take advantage of both systems. It is not for the system to take advantage of the child, but for the child to profit by the system.

Under present circumstances, the worse cases of the semi-deaf must be taught with the very deaf. It is likely that it may be found possible later to classify both classes further and to rearrange the educational methods applied to them to better advantage. If the very deaf and the worse cases

of the semi-deaf fail under the oral method (which, without being an extremist, I take to be the ideal method, because it fits the child to take his part in the real, normal world in which the natural method of communication is by speech), they must not be allowed to influence the oral successes. It is here that classification is of greatest importance, and it is here that the study of the individual child reaches its highest value. Once experience has proved that a child, after thorough and careful trial, will never attain to speech, I might almost say to *useful* speech, he should be transferred to another system as soon as the fact of his failure is recognised beyond reasonable doubt. It is with a view to the recognition and elimination of obstacles to the child's best progress that careful scientific classification is of so great importance.

With the very deaf (and also with the worse cases of the semi-deaf) careful and close study of individual mental capacity is of first importance. Every child must be classified for educational purposes, so that his teacher may get the best out of him. This would be easier if there were a preparatory school, something like that at Fredericia, in Denmark, but one to which the children came at an earlier age than is at present compulsory. The slightly dull child who may be left hopelessly behind in a class of deaf scholars of normal mentality may appear comparatively bright in one of mentally defective deaf, because he is *unioculus inter cæcos*, and he is not receiving his educational rights if he is placed in either class.

The very deaf child is one whose deafness is total or whose residual hearing is of so slight a nature as to constitute a negligable quantity so far as education is concerned. The normal very deaf child is probably best educated in a day deaf school, provided his parents realise their responsibilities sufficiently to help in his education at home. The home surroundings are of enormous importance in the education of the deaf, and have their influence on classification. It is no use grading a child for work if his school attendance is irregular and his home surroundings are morally and physically bad. Regular attendance at school is of far greater significance in the education of the deaf than in that of the hearing. The loss of an average of one day a week at school in a deaf child's education is equal to the loss of two or three days per week in the case of a hearing child. It seems difficult, sometimes, to make the ordinary school attendance officer realise this fact.

The very deaf may be divided into oral successes and oral failures, and both of these might be graded further according to their mental capacity. As with the worse cases of the semi-deaf, there will be certain borderland cases educable partly by one system, partly by another. Both groups require special education, both require careful classification; especially those who have failed under the oral system. It is only by study of the individual child that the causes of failure can be ascertained. The oral successes must be kept rigidly to the oral method, the failures should be segregated and trained by other systems. Borderland cases, as I have just said, will occur, and it is obvious to the physiological educationist that even a small proportion of speech is a precious possession not lightly to be withheld.

It is not a question of what special system is the best to follow, but of what system, or combination of systems, is best for the individual child. It is essential that this should be kept clearly in view by everyone who has the welfare of the deaf at heart. In emphasising this fact, I am doing so because I speak here to a mixed audience, not to an audience composed entirely of teachers of the deaf. Teachers of the deaf appreciate this fact well and apply it, that is why they achieve the success they do. There is no teacher of the deaf who is worth his salt who does not place the study of the individual child in the forefront of his work; teachers of the deaf realise that without it they can never become successful teachers.

In a position by itself stands the defective deaf child; one to whose auditory incapacity is added the infirmity of blindness or of mental defect. These children re-

quire very special treatment under teachers of high capacity and proved experience. Every defective deaf child requires the most minute individual study; often he proves a very mine of surprises. His capacity has to be gauged, his best points discovered and developed to their fullest extent. In a class of the defective deaf no two individuals will be found alike, and the education of such a class calls for the utmost effort and ingenuity of the teacher.

We must now return to the study of the slightly deaf child. As I have already said, these children may be divided into the very slightly deaf and the hard of hearing. The former is one who can be educated successfully in the front row of an ordinary elementary hearing class; the latter require special teaching in whole or in part. It is this group of hard of hearing children that has been most neglected educationally, and until recently it was here that there existed the most crying need for reform. For years the hard of hearing child has either dragged out an unsatisfactory existence in the back row of a large hearing class, unjustly stigmatised as inattentive and left to himself, or wrongly punished as incorrigible, or he was, possibly, educated in a special school, either for the deaf or for the mentally defective. Under the circumstances then existing, the former was the better place for him.

In a mentally defective school such a child might pick up a little if individual attention were given him, or he might remain without any real effort being made to develop him. In a deaf school, although he learned a lot and did well, he was really placed in an atmosphere to which he was unused, since the attitude of mind and methods of thought in the very deaf are totally different to those of the hard of hearing. Hard of hearing children are chiefly cases with useful speech, deaf from neglected throat conditions, adenoids or nasal obstruction. They are not to be found among the congenitally deaf nor among those semi-deaf who have acquired their defect from such causes as meningitis, mumps, or injuries affecting the internal ear. They are essentially cases of middle ear deafness due to suppuration or catarrh. They are distinctly unfit for a deaf school, and the necessary association there with deaf-mutes so-called. At the same time, they are unable to profit by ordinary hearing school methods.

Now the question of the hearing of children as an indication of their ability to be educated successfully in a hearing school in the front desks, or in a special hard of hearing class, is an interesting and difficult one. There are several factors which have to be taken into consideration in estimating accurately their fitness for the one or the other. Such factors are shyness, individual variations in mentality, the listlessness engendered by a sojourn in a large hearing class where the inability to hear well has resulted in what may be described as chronic inattention, and especially the variations, often daily variations, in the hearing acuity.

When I first commenced to examine children for admission to the hard of hearing classes recently established by the London County Council, I tried to make a hard and fast standard of hearing. But one cannot make hard and fast standards at will; and experience has taught me the fallacy of any empirical estimate of the amount of hearing which should qualify for admission to such a class. The amount of hearing which decides the question of whether a given child is to be classified as fit for (1) hearing class, (2) hearing class in front desk, (3) hard of hearing class, or (4) deaf school, can only be arrived at after prolonged observation and experiment.

Probably, given normal mentality, a comparatively small amount of hearing is sufficient to enable a child with acquired deafness to be instructed in a hard of hearing class, whereas in dull or very backward children one is justified in advising such a class when the hearing is comparatively great. In saying this, I am giving the opinion formed by some four years of close observation and examination of hearing in scholars educated in hard of hearing classes, and the results obtained thereby. Thus, I have found a bright, quick child

with only six inches of hearing for the ordinary conversational voice doing as well or even better than a dull child who could hear the same test at sixteen feet.

An important factor which, although I took it into consideration when the first hard of hearing class at Ackmar Road began its splendid pioneer work, I have realised much more during the past year or eighteen months, is the daily variation in the hearing of many of these cases. Whilst the hearing in some of the children remains to all intents and purposes stationary, that of others (especially when the deafness is due to middle ear catarrh) varies, within considerable limits, with the state of the weather and the health of the child.

I am inclined to think that the amount of hearing required to enable a child to respond well to education in the front desks of a hearing class is much greater than at first sight appears. It is characteristic of middle ear deafness that the power of accommodating the ears to particular sounds is impaired, and that, in consequence, extraneous noises confuse the slightly deaf and hard of hearing child much more than they do the hearing scholar. In every class, especially in large ones, there is an environment of more or less continuous outside sounds; shuffling, coughing, whispering, dropping of books, etc., as well as the more distant hum of life outside the school, accentuated by open windows. Children examined by the voice and whisper tests in a quiet room may deceive one as to the *usefulness* of the hearing they possess, especially if the child is examined on one of his "good days."

The amount of daily variation of hearing is sometimes astonishing, as shown by the records kept by the teachers at our present hard of hearing classes. Hence, when a child is sent up from an elementary school as fit for a hard of hearing class, it is most valuable, often essential, that a short report of the teacher's own observations can accompany it. Seeing that I have met with children who can hear the whisper very fairly well on one day and not at all on the next, the difficulty of deciding by a single examination in a quiet room is manifest. If any hard and fast rule is to be made, the limit allowed for hearing must be a wide one. Probably the best would be to educate all those who cannot hear whispered speech below a distance of six feet (I am, of course, not including the totally deaf, very deaf and semi-deaf) partly in a hard of hearing class and partly in a hearing school, a method which is now being pursued in our later hard of hearing classes. Lesser defects of hearing than the six feet whisper do well in the front desks of an elementary hearing school class.

In speaking of the whisper test, I must point out that the so-called "forced whisper" is one which is produced by emptying the chest of air and whispering with the last breath. Some persons seem to be labouring under the impression that they are whispering when, after drawing a long, deep breath, they produce something that resembles rather the death rattle of a bull elephant.

Another factor that must be taken into consideration is the presence of defective speech. Such defects are usually of a minor character and capable of correction by careful attention to articulation; they are almost always indicative, in children of normal mentality, of a degree of hearing less than at first sight may appear.

A great deal can be learned concerning the necessity for the special education of hard of hearing children by examining the results so far obtained by the hard of hearing classes now established by the London County Council.

The method pursued is to instruct the children in lip-reading, phonetics, speech training, recitation, reading and English in the class. These lessons are given by means of conversation, commands, dictation, stories, newspaper items, and the like. A certain time is devoted daily to lip-reading without voice; other lessons are given in the ordinary voice in order to combine hearing and lip-reading. The children also are encouraged to practise lip-reading among themselves. All other work (such as manual training, needle-

work, drill, nature study, advanced arithmetic, and cookery) is done in the adjoining hearing school and in the manual and cookery centres. At the first class established, that at Ackmar Road, however, the scholars got the whole of their education in the class, except that cookery is taught in a hearing centre. It was not intended that this class should have been established in a deaf school, but circumstances arose at the time that necessitated the course adopted.

The results so far obtained have been very satisfactory. Out of one hundred and six children dealt with, seventy-one are still in the classes. Of the remaining thirty-five, four have left school (one to domestic service, three to other work), thirteen have been transferred to hearing schools, nine to deaf schools, and three to industrial schools. Two were excluded, one died, three left the neighbourhood, and one was absent from prolonged illness. Taking these seven and the four who had completed their legal period of education into consideration, the number transferred to hearing schools may be said to have been thirteen out of twenty-seven, or 48.1 per cent., and all these have held their own well.

In judging whether a hard of hearing child is fit to return to a hearing class account must be taken of his proficiency in lip-reading and the amount of his residual hearing. Even in the front desks, such a scholar must necessarily lose a certain amount from his inability to watch his teacher's face properly and continuously. The child cannot lip-read his teacher whilst bending over a book or exercise, or whilst the latter has his back turned, as when writing on the blackboard. If the scholar has fair residual hearing, however, he can benefit largely by the mutual assistance of hearing and lip-reading.

I should like here to allude to the experience of teachers of hard of hearing children in regard to the child's ability to learn lip-reading. The standard of lip-reading attained in these classes is a high one. Lip-reading appears to be readily acquired by most children. Those with most hearing seem to learn it most quickly, whilst those with less hearing require longer teaching and practice to enable them to become thoroughly proficient lip-readers. This is due to the fact that the former possess a better knowledge of language, and, other things being equal, the greater the amount of hearing, the greater is likely to be the command of language.

One has only to follow the progress of the children who are taught in these hard of hearing classes to realise how needful and valuable is the instruction they receive, and what an important position such classes occupy in any scheme of classification. The classes provide a method of education which enables the hard of hearing child to lose his former apathy and listlessness, born of compulsory inattention from inability to follow his teachers in the hearing school. It enables a number of children to return to a hearing class and keep up with their more fortunate class-mates, and to go out into the world with a ready means of communication which is of enormous assistance to them in making a living.

Parent Educators.

By Professor Bidart.

Translated by Miss M. S. Ryan, B.A.

10. *Methods of Punishment.* If I know how to turn to the best advantage the facts previously enumerated, I shall very seldom be compelled to take extreme measures, and even then a slight punishment will be sufficient because a punishment of any kind is such an unusual event. The required result is not produced by the punishment but by the child's attitude towards it.

Accordingly, I shall, in the ordinary way, expect my child's conduct to give me satisfaction. A severe look will be enough to show him that I am no longer pleased with him, or, in other words, that he has done wrong. This should cause him pain and will, frequently, be enough to check his naughtiness and to make him resolve not to be naughty again.

If I want to show greater displeasure, I have only to address him for a time by "you" instead of "thou"; he will understand that he has forfeited my affection for the time being, owing to his bad conduct; he will realise and appreciate the difference in my treatment of him, and that is all that is required. A still severer punishment will be to forbid him to address me by "thou," if he is accustomed to do so. In short, a slight show of displeasure is enough for small faults. A little goes a long way either in punishments or rewards.

A child who is *scolded* does not clearly distinguish whether the parent is annoyed with him or with what he has done. There should be no possible doubt as to the reason of any blame addressed to a child. He must not be able to think, "I am scolded because father is out of temper," but "I am scolded because I have done wrong." In every way, blame is more effective than reproach.

If I know how to administer blame rightly, I shall not fall into that common mistake of bewildering and overwhelming a child by continual reproaches. I can understand that a sorely-tried woman may say to her drunken husband, as in one of Molière's comedies, "You spend all your time in a public-house, you take everything from me and leave me with four children on my hands." But I do not understand how parents can use this kind of tone to their children. Really sometimes we parents fail to understand our position. We harass the poor child as if he were some enemy whom we cannot get hold of, as if he were naughty simply to defy us, and "against a helpless, ignorant little being who crouches before us and tries to efface himself, we direct as much fury and nervous energy as would annihilate our most powerful opponent." This is all beside the purpose. A child is naughty because he is a child and because he is *our child*. His faults date from his birth, and we must bear with him until we have transformed his very faults into good qualities. We should always have this thought present in our minds, it is most important because it defines the part of both parent and child; the child is not an enemy to be laid by the heels, he is a dependent creature to be lifted to the heights. The person in authority must not make complaints, he must act. Few words, many acts, good influences, habits, impressions, examples, these train mind and heart in the right direction.

When and how should blame be given? Fénelon, the mildest of pastors, admirably writes:—"We must await the moment when the child's mind will be disposed to profit by the correction. Do not blame him *in his first impulse nor in yours*. If you blame him on your first impulse, he perceives that you are moved by a fit of temper or hastiness, and that you are acting neither with reason nor with affection. You will lose your authority and you have nothing to fall back upon. If you blame him in his first impulse, he will not have sufficient control to acknowledge his fault, to conquer his passion and appreciate the value of your advice; you may even expose him to the chance of losing the respect he has for you. Let him see that you always have yourself under control. Nothing will show that more plainly than your patience with him. Wait even several days for the opportunity to give him the appropriate correction." This mode of treatment is particularly important in the case of young girls of whose characteristics Madame de Maintenon made such a careful study. "There are unfortunate days and even moments when they (young girls) are highly nervous or very emotional, ready to take offence at anything; nothing you can do or say will bring them to a calm frame of mind. Of course you must not do anything to compromise your authority absolutely, but you can wait patiently till the storm passes—it may be that even on the morrow there will be peace. *You must leave them the time to grow calm and you must be calm yourself.*"

Yes, we must be calm. We have, all of us, our moments of bad temper and irritability, for life is sometimes hard and the flesh is weak. When these times come,

it is better to refrain from saying anything: at any rate, we shall do no harm!

But the point is, how is one to restrain oneself at such times? We must say to ourselves beforehand: "When you feel your temper is rising, do not give way, you will only make a mistake and regret it." Of course, I shall not remain absolutely speechless; were I to do so, presently when I reprove my child, he may tell me that he does not remember what it is all about. What I must do is to say to him, "That is a wrong thing for you to do, presently I will tell you why." The offender will leave off whatever he is doing, he knows that it is wrong, and he will ask himself how and why. Now this reflection prepares him for my later explanation. Then a careful explanation either of the temptations which led him astray or of the motives he had for resistance becomes of real value; it is a practical, moral lesson, the impression of which he will retain for ever. Thus the blame, given, so to speak, in two instalments, is very salutary; had it been given all at once, it might have embittered, irritated or overwhelmed him. All things being equal, I shall not wait too long, just long enough to allow the natural irritation to calm down, but no longer. A child forgets quickly, and it does not do for him to be able to say to me "I am a good boy now!"

The Child-Study Association and the Constituent Societies.

Birmingham Society.—The following Lectures will be given at King Edward's High School, New Street, at 6 p.m.:—

Dec. 8th.—*Our Elementary Schools from an Inspector's Point of View,* by A. Horton, Esq.

Jan. 26th.—*Notes on Certain American Ideals in Education,* by Miss M. S. Lilley, M.A.

Feb. 16th.—*The Significance of Rhythm in Plato's Scheme of Education,* by Prof. E. T. Campagnac, M.A.

March 16th.—*Leading Principles in Educational Reform,* by Prof. J. J. Findlay, M.A.

The Lecture by Mr. R. A. Jones, M.A., on "Ambidexterity" is postponed, as Mr. Jones has been appointed Captain in the Second Birmingham City Battalion.

Reviews.

The Infant: Nutrition and Management. By Eric Pritchard, M.D., M.R.C.P. London: Edward Arnold, 1914. 8vo., 265 pp. 3s. 6d. net.

This book is founded on lectures delivered to medical students or to medical societies, and the character of the work is naturally determined by this fact. It is accordingly for the most part suitable for medical readers only. There are, however, one or two chapters of special interest to students of the sociological and physiological bases of Child-Study. From this point of view attention may specially be directed to Chapter XII. The Teaching of Mothercraft and its Influence on Infant Mortality; Chapter V. The Training of Nerve Centres in Infants; and some passages in Chapter X. on Convulsions in Infancy. For the rest the main topic is the feeding of infants, but, as stated in the preface, those who read the book in the expectation of finding a full description of the methods of feeding infants will be disappointed, for, according to the views herein set forth, each case must be regarded as an individual problem to be solved by the practical application of certain general principles. The treatment depends more on its first experiences than on any other factor, and each infant has its own past.

The author attaches considerable importance to the appropriate drilling and training of certain simple organic mechanisms. The stimulus to set these mechanisms in action is usually provided by nature, but nature's efforts are often frustrated by the unwarrantable interference of man.

Habits of sleep and of digestion, the author writes, often show evidence of the kind of education to which the nervous centres which control them have been exposed. He elaborates this principle in relation to the question of "hardening" in an interesting and practical manner, and the exposition he gives of the physiological basis of such training cannot but be of value to the educationist. He utters a useful warning in saying: "The infant who is passed over, played with unwisely and too often, who is the object of the anxiety of solicitous and nervous parents, reacts to this state of nervous tension, and himself becomes neurotic and hysterical.

El Monitor de la Educación Común, Buenos Aires, August 31st, 1914.

Dr. Ry writes an article on the apparatus and methods of Phonetics and their application to speech and song. Dr. C. N. Vergara, an inspector of schools, laments the ineffectiveness of school as a preparation for the realities of life. His article is an introduction to one by Sra. Ponce de Arnold, describing how she attempts to introduce reality into her school by giving more independence of action and discussion to her scholars. Dr. Angel C. Bassi, in an article on Didactic Forms, classifies methods of instruction as (1) exposition or dogmatism, the characteristic method

of the university professor; (2) dialogue, most suitable for the elementary school; (3) book-work, the method of the idle or incompetent teacher; (4) discussion, stimulating, but liable to abuse; and (5) *questionnaire,* much used in North American colleges, and favoured by certain Argentine educational authorities for the stimulation of individual investigation. Dr. Bassi discusses the advantages and disadvantages of each method and the circumstances in which each may profitably be used. He strongly condemns the third method, which has a great vogue in the secondary schools and training colleges of the Argentine. When the reviewer was in the Argentine he formed the opinion that it would be impossible to eradicate the plan of memorising the text-book till political considerations had ceased to interfere in appointments. Sta. Rena Frankeberger describes an attempt to obtain designs for a civic banner from school-children—the colours and forms used to be symbolical. Sr. D. Leiva Paiva describes the teaching of history and geography in the three higher classes of his school, and shows how he endeavours to make history concrete and dramatic, and how he relates it to geography. In the latter he pleads for experimental teaching, and especially for school journeys. The next article is the first instalment of the translation of a lecture by M. Bocquet on the teaching of composition. He divides the childish vocabulary into two parts: (1) objective—names of objects; (2) subjective—the expression of the child's thoughts about objects; verbs and adjectives. The former is the more prominent. Of two hundred and fifty words known by a child of seven years about two hundred are names. M. Bocquet proceeds to show the importance of the subjective part of the child's vocabulary and how he endeavours to increase it. Dr. Inurrigarro concludes his series of articles on the effects of alcohol, and the remainder of the first part is taken up with photographs of picturesque schools, an illustrated report of the night-school work of the society of "Friends of Education," the translation and modification of an article on projective geometry by Weber and Wellstein, and a short article by Dr. Genaro Sisto on the medical examination of school children.

The Montessori Principles and Practice. by E. P. Culverwell, M.A

We gave a very brief notice of this book in a former number, and promised a longer one, which we now give.

Professor Culverwell holds that there is need "to place education, even the most advanced, on a biological basis, which is, indeed, the only basis suited to a democratic State." To this end "broader ideals are needed. Utility must be sought, not only directly, *i.e.,* through instruction which can be immediately utilised, but also through disciplinary training; and this training should be of the body as well as of the mind... We must insist on disciplinary studies; but we must use, as the means of mental discipline, studies which are in close and immediate touch with life as it now exists"...for "mental power [is] directly increased by physical culture." This is a broad and philosophic view of the function of education and includes the substantial elements of both the most classical and the most modern views on the subject.

From this point of view, especially in relation to "the recognition of the biological nature of the problem," the author considers that "In no method has that recognition been so full and so frank as in that of the Dotteressa Montessori," though her "method is itself but in the making," and "time will probably show the desirability of introducing more of the æsthetic element, and modifications of the educational apparatus may also be found desirable, as further experience is gained with different types of children." With Madame Montessori "the biological principle of liberty...is the fundamental principle of education."

The foregoing paragraphs give, in very brief outline, the standpoint from which the Professor has written his very able, lucid, and original book. There are few recent books which give such a fresh and philosophical view of the foundation problems of education, or so helpful and suggestive a handling of them. The chapters on "Physiological Education," "Spontaneity" and "The Principle of Liberty," are of very special value, and there are probably few, if any, teachers who would not be greatly helped by the careful study of them. They give one of the best vindications which the present writer has read of the function and value of educational handwork, and the real meaning, basis, and limits, of the principle of liberty in education. One is almost inclined to believe—so great is the need for a clear understanding of the underlying principles—that no ordinary reader of Madame Montessori's books will truly understand them unless and until they read Professor Culverwell's book, and therefore one very particularly recommends this course.

But there is much more in the work than a discussion of first principles, and the author justifies his claim "to treat very fully of the principles which underlie the practice, so that not only teachers, but parents and others in charge of little children, who have made no previous study of education, will be able to apply them intelligently." This is done in the chapters on "The Teaching of Writing and Reading," "The Montessori School and Apparatus," and "Character and Discipline."

Publications Received.—*Journal of Education; Educational Times; Educational Review* (U.S.A); *The Training School* (U.S.A.); *The American Teacher* (U.S.A.); *The Bulletin of the American Institute of Child-Life* (U.S.A.); *The Children's Story of the War,* Thomas Nelson and Sons, 1d. parts.

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